



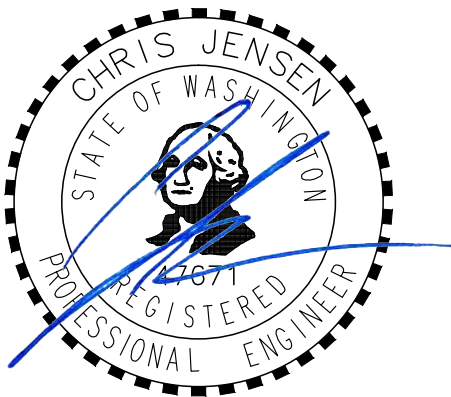
TECHNICAL INFORMATION REPORT

Brown Bear - New Build

55 N.W. Gilman Boulevard
Issaquah, Washington

City/County File No. TBD

Prepared for:
Car Wash Enterprises, Inc
3977 Leary Way N.W.
Seattle, WA



April 3, 2020
Our Job No. 20693

04/02/2020

TECHNICAL INFORMATION REPORT

Barghausen Consulting Engineers, Inc.

Brown Bear - n=New Build

Issaquah, Washington

Our Job No. 20693

TABLE OF CONTENTS

1.0 PROJECT OVERVIEW

Figure 1.1 – Vicinity Map

2.0 CONDITIONS AND REQUIREMENTS SUMMARY

2.1 Analysis of the Minimum Requirements

3.0 EXISTING CONDITIONS SUMMARY

Figure 3.1 – Soil Survey Map

Figure 3.2 – Sensitive Areas Map

Figure 3.3 – Assessor's Map

Figure 3.4 – FEMA Map

4.0 OFF-SITE ANALYSIS REPORT

Figure 4.1 - Downstream Map

5.0 PERMANENT STORMWATER CONTROL PLAN

5.1 Existing Site Hydrology

Figure 5.1 – Pre-developed Basin Map

5.2 Developed Site Hydrology

Figure 5.2 – Developed Basin Map

5.3 Performance Standards and Goals

Figure 5.3 – Drainage Facility – Table 1-4 Water Quality Treatment Options

Figure 5.4 – Table 1-5 Requirements for On-Site Stormwater BMPs (MR#5)

5.4 Low Impact Development Features

5.5 Flow Control System

Figure 5.5 – Table 1-1 Project Screening for Stormwater Review

Figure 5.6 – Central Issaquah Area Alternative Flow Control Standard Map

Figure 5.7 – Detention Sizing Calculations

Figure 5.8 – Bypass Runoff Calculations

5.6 Water Quality System

Figure 5.9 - Contech WQ Basin Map

5.7 Conveyance System Analysis and Design

- 6.0 CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN
- 7.0 SPECIAL REPORTS AND STUDIES
- 8.0 OTHER PERMITS
- 9.0 OPERATIONS AND MAINTENANCE MANUAL
- 10.0 DECLARATION OF COVENANT FOR PRIVATELY MAINTAINED FLOW CONTROL AND TREATMENT FACILITIES
- 11.0 DECLARATION OF COVENANT FOR PRIVATELY MAINTAINED ON-SITE STORMWATER MANAGEMENT BMPs
- 12.0 BOND QUANTITIES WORKSHEET

Tab 1.0

1.0 PROJECT OVERVIEW

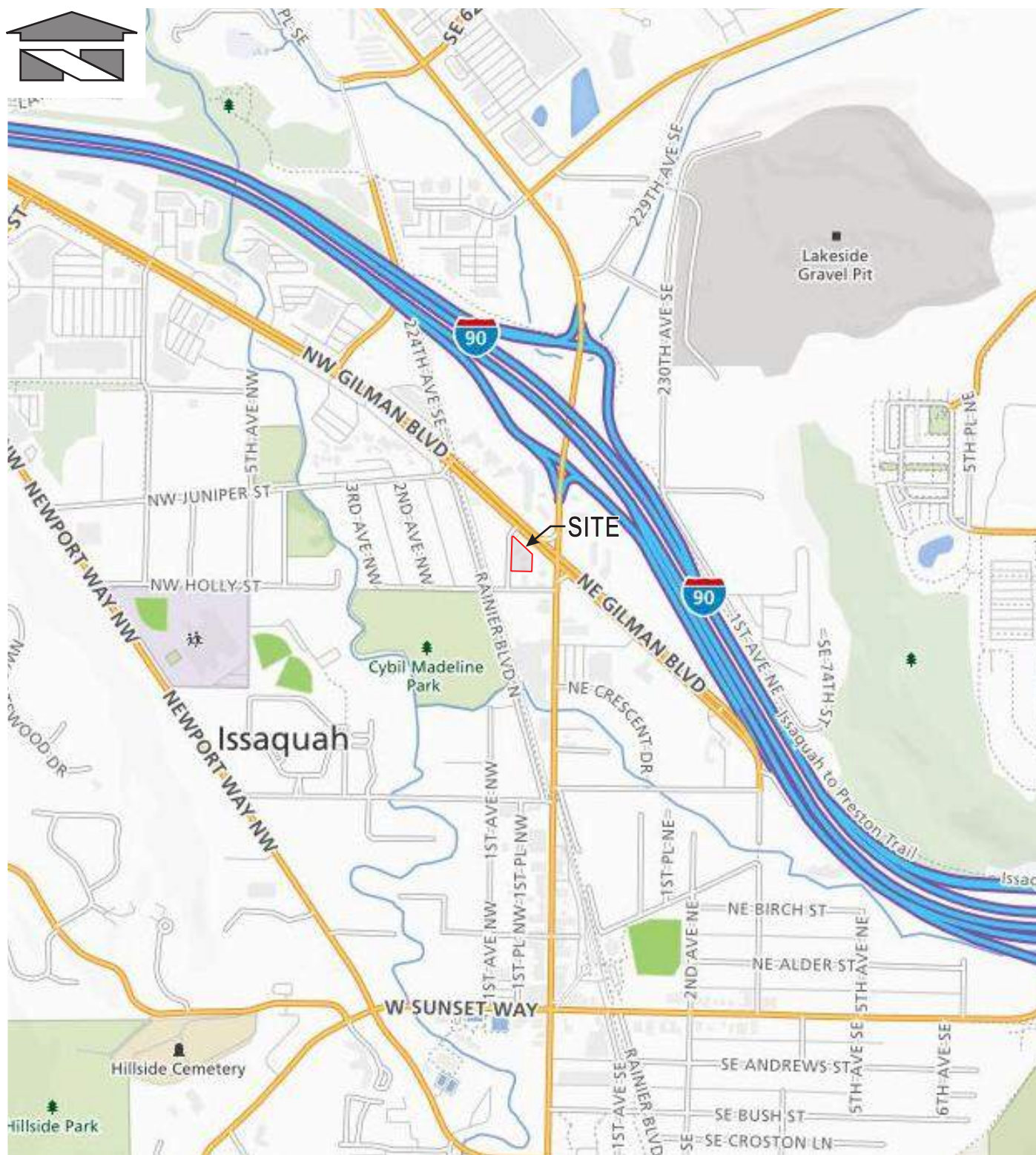
The proposed project site is located within Section 28, Township 24 North, Range 6 East of the Willamette Meridian with a total tax parcel area of 0.42 acres. More specifically, the site is located at 55 N.W. Gilman Blvd, Issaquah, WA 98027. The site consists of a single tax parcel with the number 8843500440. See Figure 1.1-Vicinity Map in this section for the location of the proposed project site.

The proposed development includes the construction of a 2,100-square-foot Brown Bear Car Wash, Auto Sentry Canopy, a covered trash enclosure, and replaced driving surface. The project will involve the removal of an existing gas station, and paved driving surface. The site is generally flat, with mild sloping down gradient from southeast to northwest. There do not appear to be any mapped or observed critical areas within the site's immediate vicinity. Existing site vegetation primarily consists of lawn grass, and landscaping shrubs.

The project site consists of a single Threshold Discharge Area and intends to match the existing drainage patterns on site. This project proposes more than 10,000 square feet of new and replaced impervious surface, and therefore all minimum requirements must be evaluated as specified in the flow chart (Figure 2) of this report. As part of the drainage requirements, the project intends to detain runoff generated from the site improvements to the maximum extent feasible, and comply with the Standard Flow Control Requirement per section 2.4.7 MR#7: Flow Control of the City of Issaquah 2017 Stormwater Design Manual Addendum. Additionally, this project proposes more than 5,000 square feet of new and replaced pollution generating hard surface to a commercial project site and therefore must provide enhanced water quality treatment per Section 2.4.6 MR#6: Runoff Treatment. This Stormwater Site Plan (TIR) will serve to address the drainage requirements contained within the City of Issaquah 2017 Stormwater Design Manual Addendum and the 2014 DOE Western Washington Stormwater Manual. Please see the remainder of this report for the project's design intent for mitigating any adverse impacts as a result of on-site improvements.

Figure 1.1 Vicinity Map





REFERENCE: Rand McNally (2019)

Scale:

Horizontal: N.T.S.

Vertical: N/A



**Barghausen
Consulting Engineers, Inc.**

18215 72nd Avenue South

Kent, WA 98032

425.251.6222

barghausen.com

For:

**Brown Bear Car Wash
Issaquah, Washington**

Title:

VICINITY MAP

Job Number

20693

DATE: 10/24/19

Tab 2.0

2.0 CONDITIONS AND REQUIREMENTS SUMMARY

This section contains the following information:

2.1 Analysis of the Minimum Requirements

2.1 Analysis of the Minimum Requirements

MINIMUM REQUIREMENTS	HOW PROJECT HAS ADDRESSED REQUIREMENT
No. 1: Preparation of Stormwater Site Plans	This Minimum Requirement has been fulfilled by the preparation and completion of this Stormwater Site Plan (TIR).
No. 2: Construction Stormwater Pollution Prevention (SWPP)	A completed Construction Stormwater Pollution Prevention Plan (SWPPP) will be submitted separately from, or together with, this report during Final Engineering Review.
No. 3: Source Control of Pollution	All known, available, and reasonable Source Control BMPs will be applied to this project in accordance with those applicable to a car wash project. At a minimum, the parking lot will be swept on a regular basis, and the owner will be educated about the proper use of pesticides and fertilizers. Per section 1.2.4 of the 2017 COI Stormwater Design Manual Addendum, the trash enclosure will be graded to prevent run-on from adjacent areas, and will drain directly to the sanitary sewer system. Additionally the trash enclosure will be constructed with a rooftop to minimize stormwater contact with trash and associated pollutants. Car washing areas will drain directly to the sewer system, and all chemicals will be stored within the carwash structure. Per S431 BMPs for Washing and Steam Cleaning Vehicles/Equipment/Building structures, all vehicle washing will take place within the proposed structure, and wash water will be collected by the carwash tunnel trench and discharged to the sanitary sewer system. Wash water will be isolated from stormwater runoff.
No. 4: Preservation of Natural Drainage Systems and Outfalls	The existing site appears to collect runoff into catch basins located on-site and discharge to the public stormwater conveyance system within N.W. Gilman Avenue. The proposed drainage design will collect on-site runoff and discharge stormwater to the same public stormwater conveyance system, thus preserving the existing drainage patterns.
No. 5: On-site Stormwater Management	This project triggers Minimum Requirements Nos. 1 through 9, and is defined as a redevelopment on a parcel inside the UGA; therefore, this project must either apply the Low Impacted Development Performance Standard and BMP T5.13: Post Construction Soil Quality and Depth; or evaluate the feasibility of the BMPs in List No. 2. This project will choose to evaluate the feasibility of BMPs from List No. 2 and apply them to the maximum extent feasible; however, it appears that all on-site stormwater management BMPs for proposed impervious surfaces are infeasible for this site.
No. 6: Runoff Treatment	This project proposes greater than 5,000 square feet of pollution generating hard surface, and must provide a water quality treatment facility. This site is defined as a commercial project and therefore, Enhanced Water Quality Treatment, and phosphorus removal must be provided. Runoff treatment will be provided by a Modular Wetland Water Quality System. This project is considered a high-use site, and will provide an on-line oil/water separator located downstream of the detention facility for oil control.

No. 7: Flow Control	This project proposes more than 10,000 square feet of new and replaced hard surface, and must provide flow control. A detention facility has been sized with WHHM2012 to match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50 percent of the 2-year recurrence interval peak flow up to the full 50-year peak flow.
No. 8: Wetlands Protection	There are no documented wetlands recorded on-site.
No. 9: Operation and Maintenance	The drainage facility for this project will be a private facility, owned and maintained by the owner. An Operation and Maintenance Manual will be provided in Section 9.0 of this Stormwater Site Plan during Final Engineering Review.

Tab 3.0

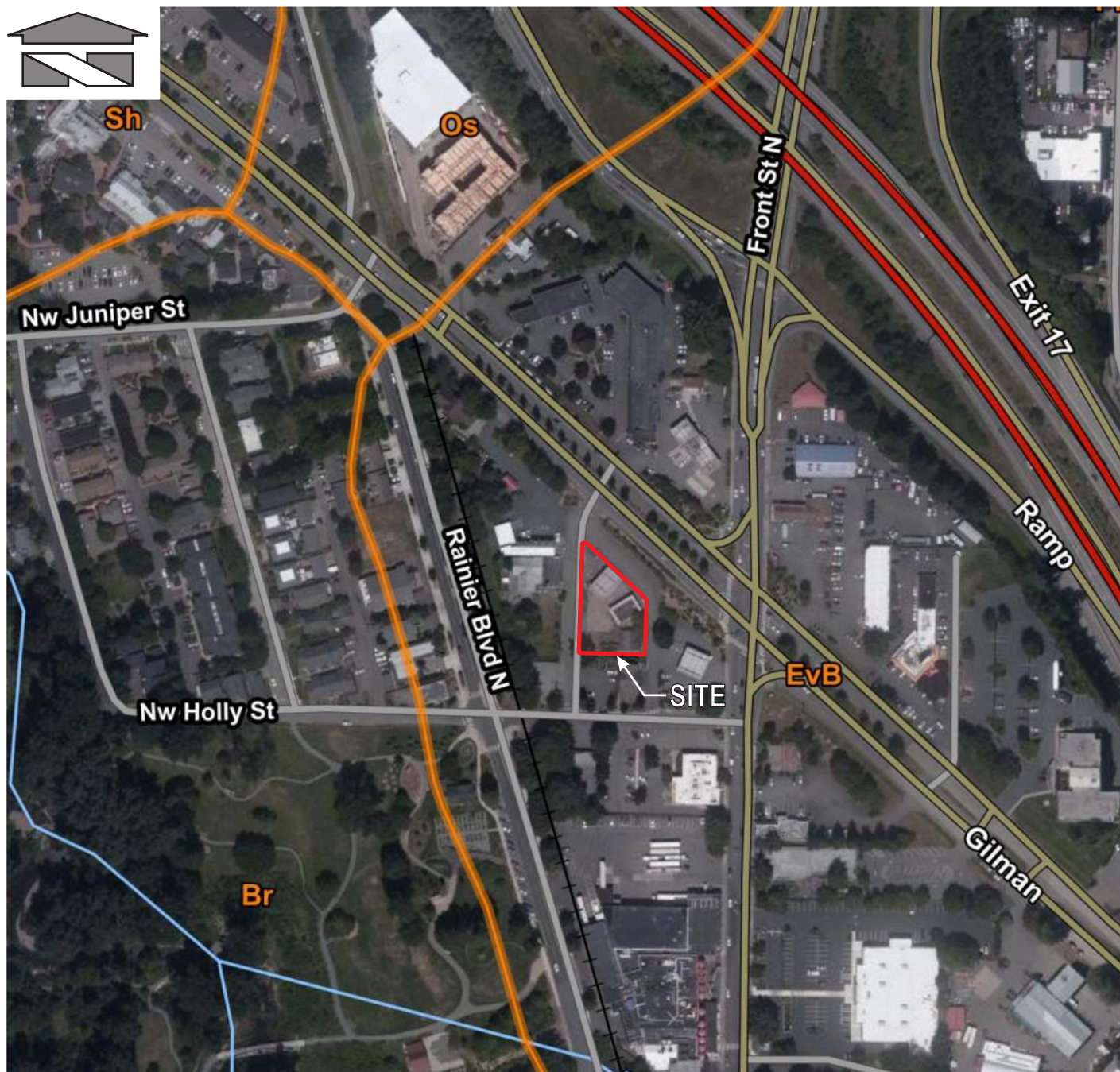
3.0 EXISTING CONDITIONS SUMMARY

The project site is located at the southwest corner of the intersection between N.W. Gilman Boulevard, and 1st Avenue N.W. Both 1st Avenue N.W., and Gilman are developed in their existing conditions. A paved alley runs along the site's east boundary. The property to the south is currently occupied by a commercial business. The majority of the site surface is covered by asphalt and concrete. Existing structures include a gas station canopy, fuel pumps, and tanks, and two existing structures. The existing impervious surfaces cover greater than 35 percent of the site's total area. The existing topography generally slopes from the southeast to the northwest at grades of 1 to 5 percent. The site soils have been identified as Everett Very Gravelly Sandy Loam, 0 to 8 percent slopes on the USDA Web Soil Survey Map. A soil investigation was conducted by Aspect Consulting, and provided information for this project's geotechnical report. The investigation determined the sites soils specifically consist of a mix between fill, and alluvium. The fill consists of "medium dense to very dense, moist, brown and gray, silty gravel with sand (GM)". The alluvium is described as dense to very dense, wet, brown and gray, gravel and sand with varying amount of silt (GM and SM). There do not appear to be any critical areas including wetlands or steep slopes within the immediate vicinity of the site; however, this site has been identified as being located within the Critical Aquifer Recharge Area Class 1 Zone and Sammamish Plateau Water District's Wellhead Protection Zone.

Figure 3.1

Soil Survey Map





REFERENCE: USDA, Natural Resources Conservation Service

LEGEND:

EvB = Everett very gravelly sandy loam, 0-8% slopes

HSG

A

Scale:

Horizontal: N.T.S.

Vertical: N/A

For:

Brown Bear Car Wash
Issaquah, Washington

Job Number

20693

Title:

SOIL SURVEY MAP

DATE: 10/24/19



**Barghausen
Consulting Engineers, Inc.**

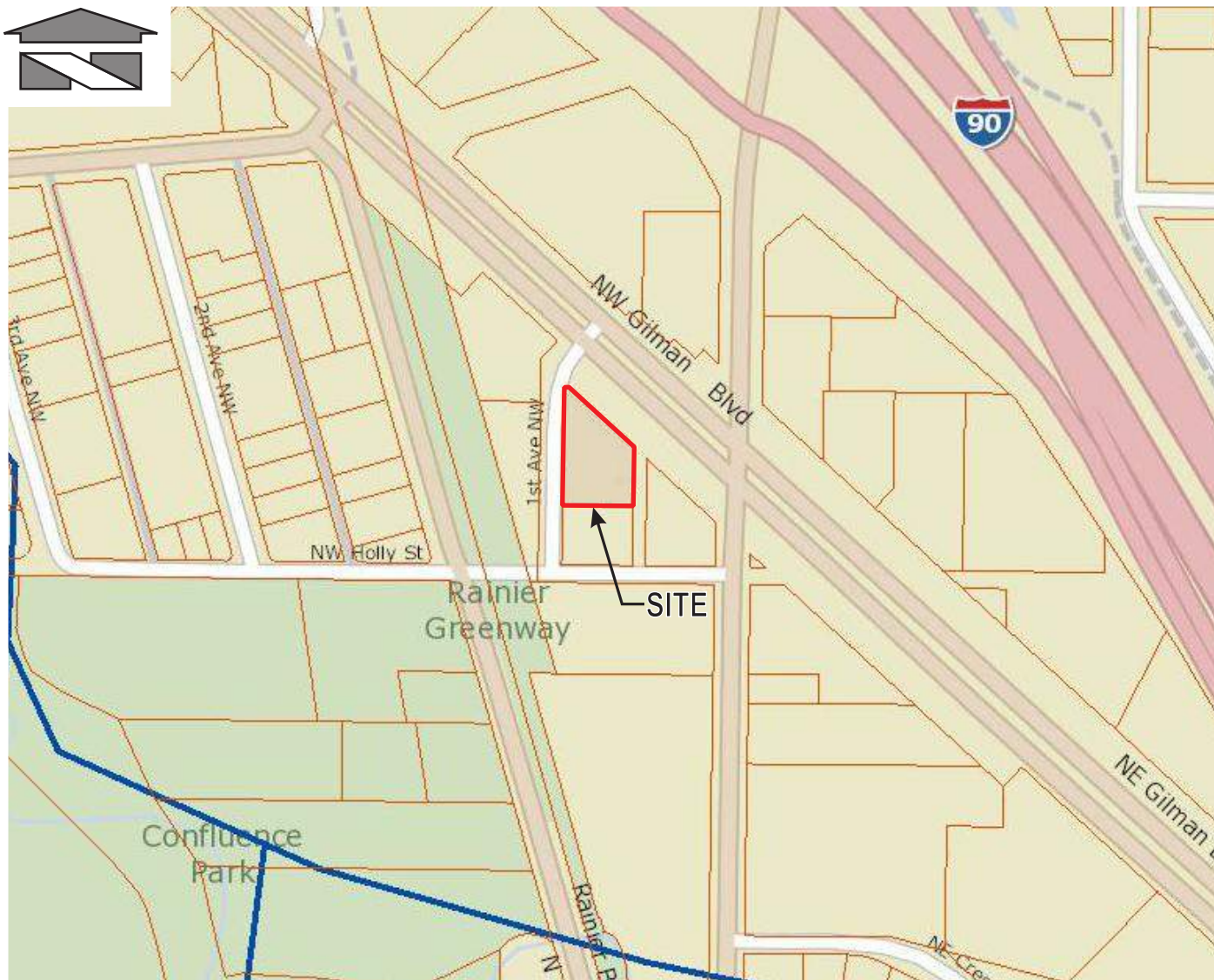
18215 72nd Avenue South
Kent, WA 98032
425.251.6222

barghausen.com

Figure 3.2

Sensitive Areas Map





Legend

- | | |
|--|--------------------|
| Parcels | class 1 |
| Potential landslide hazard areas (2016, see explanation--->) | class 2 perennial |
| Potential steep slope hazard areas (2016, see explanation--->) | class 2 salmonid |
| Erosion hazard (1990 SAO) | class 3 |
| Seismic hazard (1990 SAO) | unclassified |
| Coal mine hazard (1990 SAO) | Wetland (1990 SAO) |

REFERENCE: King County iMAP (2019)

Scale:

Horizontal: N.T.S.

Vertical: N/A

For:

Brown Bear Car Wash
Issaquah, Washington

Job Number

20693

Title:

SENSITIVE AREAS
MAP

DATE: 10/24/19



**Barghausen
Consulting Engineers, Inc.**

18215 72nd Avenue South
Kent, WA 98032
425.251.6222

barghausen.com

Figure 3.3

Assessor's Map





Scale:

Vertical: N/A



18215 72nd Avenue South
Kent, WA 98032
425.251.6222 **barghau**

For:

Brown Bear Car Wash Issaquah, Washington

Title:

ASSESSOR MAP

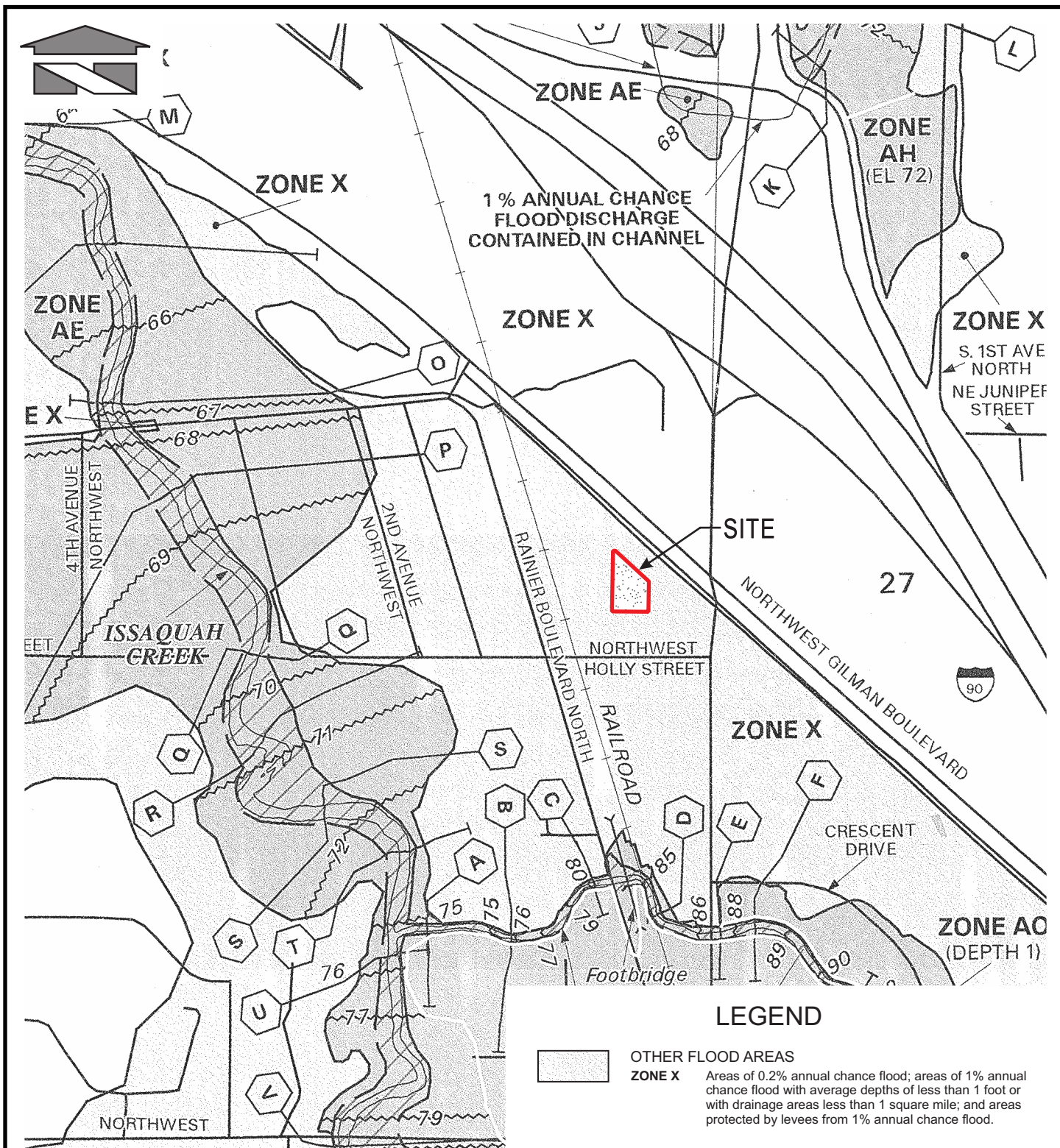
Job Number

20693

DATE: 10/24/19

Figure 3.4 FEMA Map





Tab 4.0

4.0 OFF-SITE ANALYSIS REPORT

The immediate upstream basin of the site consists of a single property to the south, and both 1st Avenue N.W. to the west of the site, and a paved alley to the east of the site. Runoff from these upstream surfaces appears to collect in the conveyance systems within 1st Avenue N.W. and the alley. It is not anticipated that runoff from the proposed development will contribute a negative impact on upstream properties.

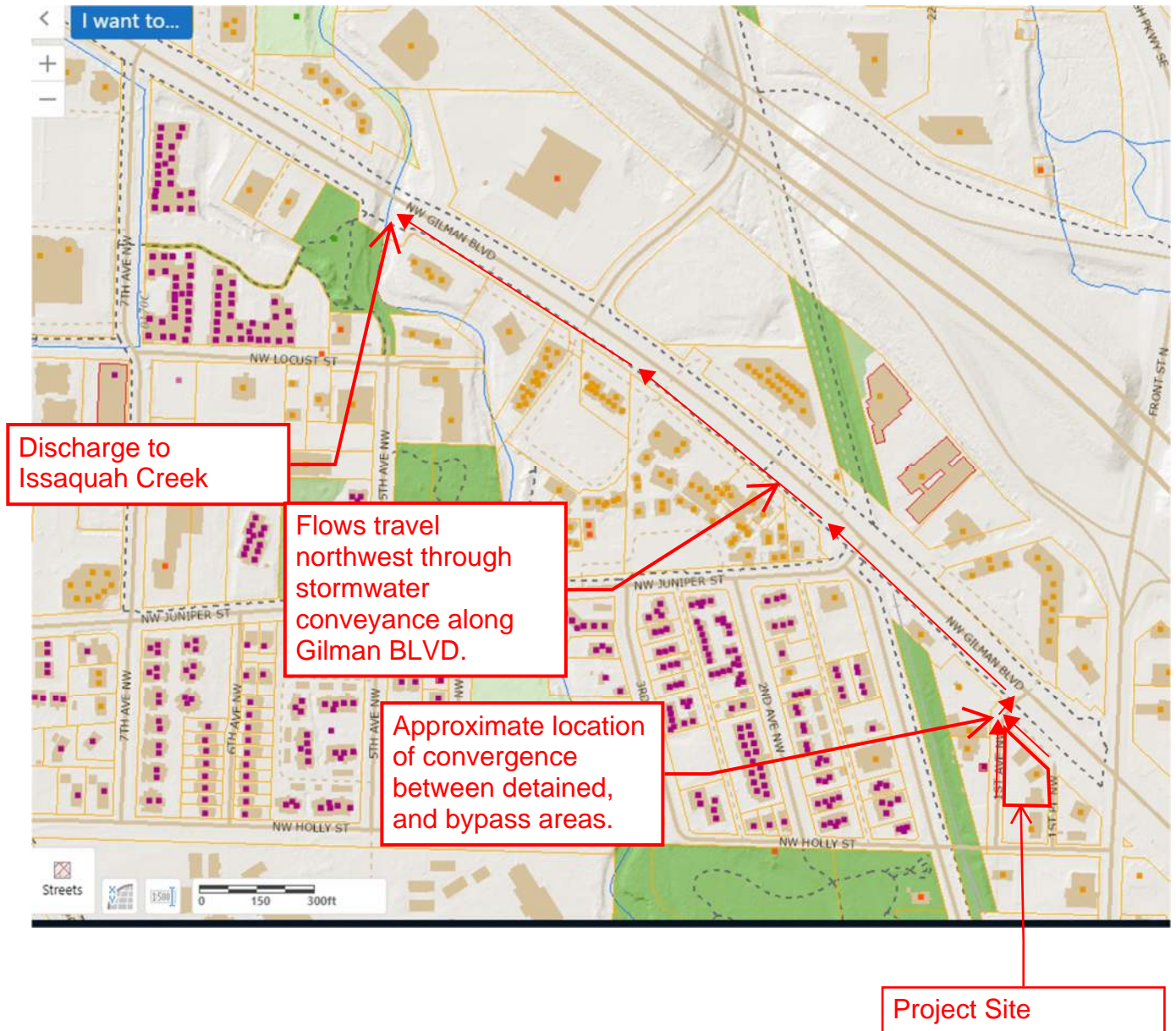
The immediate downstream basin of the site appears to be confined to N.W. Gilman Boulevard. Runoff from N.W. Gilman Boulevard is collected into catch basins and is conveyed northwest. It appears that stormwater within this conveyance system ultimately discharges to Issaquah Creek, before reaching Lake Sammamish. This project intends to detain stormwater runoff to the maximum extent feasible to meet flow control standards specified in MR#7, and proposes a net reduction of impervious surface. Additionally this project intends to provide enhanced stormwater quality treatment, and is not anticipated to create a negative impact on the downstream basin or receiving freshwater bodies.

Figure 4.1

Downstream Map



Downstream Map



Tab 5.0

5.0 PERMANENT STORMWATER CONTROL PLAN

This section contains the following information:

- 5.1 Existing Site Hydrology
- 5.2 Developed Site Hydrology
- 5.3 Performance Standards and Goals
- 5.4 Low Impact Development Features
- 5.5 Flow Control System
- 5.6 Water Quality System
- 5.7 Conveyance System Analysis and Design

5.1 Existing Site Hydrology

The existing site collects runoff into catch basins located on-site and within adjacent public right-of-ways. The existing surface is primarily impervious, consisting of rooftops, concrete, and asphalt. Limited vegetation exists on-site.

Predeveloped Basins

The predeveloped basin, tributary to the site discharge location, can be broken down as follows:

Impervious	Pervious	Total Area
0.443 Ac	0.056 Ac	0.499 Ac

Areas include both the tax parcel surfaces, and surfaces within the public ROW



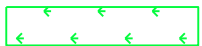
For a detailed explanation of the procedures used for the sizing of the proposed drainage facility please reference Section 5.4 of this report.

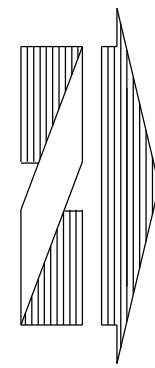
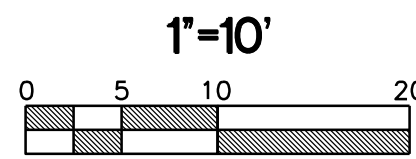
Figure 5.1 Pre-developed Basin Map



PRE-DEVELOPED BASIN AREAS:

EXISTING IMPERVIOUS/PERVIOUS AREAS

BUILDINGS:	4,382 SF (0.100 AC)	
DRIVING SURFACE, CONC. WALKWAYS, CURBS:	14,893 SF (0.342 AC)	
TOTAL EXISTING IMPERVIOUS:	19,275 SF (0.442 AC)	
LANDSCAPE:	2,449 SF (0.055 AC)	
TOTAL BASIN AREA:	21,724 SF (0.499 AC)	

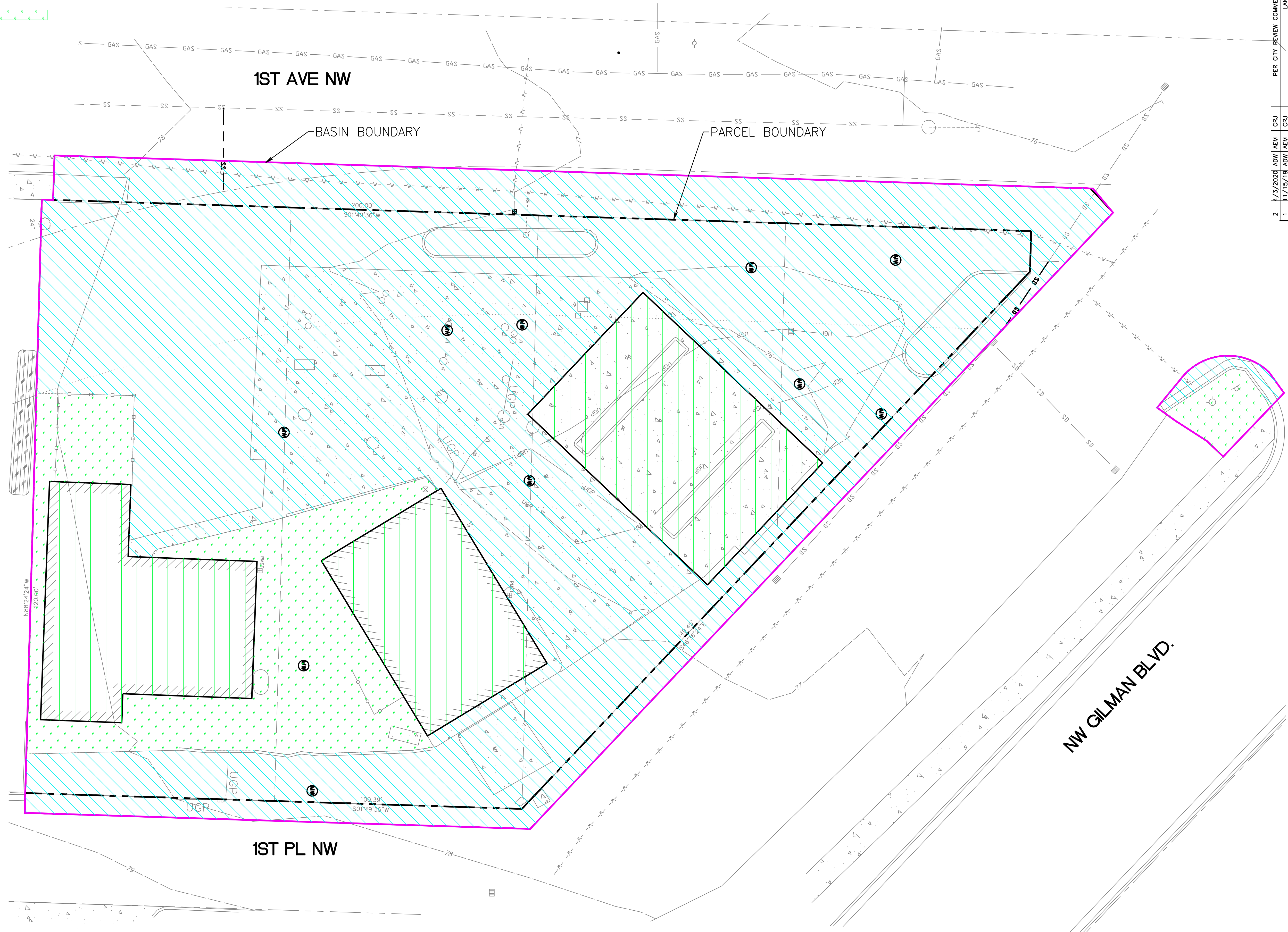


PRE-DEVELOPED BASIN MAP

FOR

BROWN BEAR CAR WASH

SE 1/4 OF NE 1/4 OF SEC. 28, TWN. 24 N, RGE. 6 E, W.M.
CITY OF ISSAQUAH, KING COUNTY, WASHINGTON



2 4/3/2020 ADW/AEM CRJ PER CITY REVIEW COMMENTS RECEIVED 02/19/2020
1 11/15/19 ADW/AEM CRJ LAND USE SUBMITAL

No. Date By Cld. Appr. Revision

Title:

PRE-DEVELOPED BASIN MAP
BROWN BEAR CAR WASH
55 NW GILMAN BLVD.
ISSAQUAH, WA

For: CAR WASH ENTERPRISES, INC.
3977 LEARY WAY NW
SEATTLE, WASHINGTON 98107

4/3/2020

Scale:
Horizontal
1" = 10'

Vertical
NA

Designed ADW

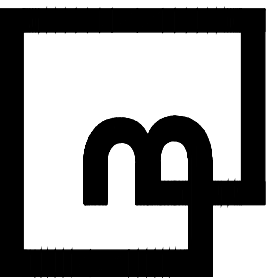
Drawn ADW

Checked AEM

Approved CRJ

Date 11/15/19

Barghausen
Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com



Job Number
20693

Sheet
1 of 1



Know what's below.
Call before you dig.
Dial 811

5.2 Developed Site Hydrology

Narrative

Developed Basins

The developed basin, tributary to the site discharge location, can be broken down as follows:

Detained Basin

Impervious	Pervious	Total Area
0.303 Ac	0.120 Ac	0.423 Ac

Bypass Basin

Impervious	Pervious	Total Area
0.074 Ac	0.002 Ac	0.076 Ac

A detailed report on the procedures used for the sizing of the proposed combination detention and water quality pond is provided in Section 5.4 of this report.



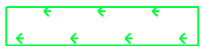
Figure 5.2

Developed Basin Map





DETAINED BASIN AREA:

NEW AND REPLACED IMPERVIOUS/PERVIOUS AREAS

BUILDINGS:	2,890 SF (0.0663 AC)	
DRIVING SURFACE, CONC. WALKWAYS, CURBS:	10,294 SF (0.2363 AC)	
TOTAL NEW AND REPLACED IMPERVIOUS:	13,184 SF (0.303 AC)	
LANDSCAPE:	5,247 SF (0.120 AC)	
TOTAL DETAINED BASIN AREA:	18,431 SF (0.423 AC)	

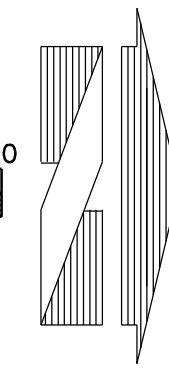
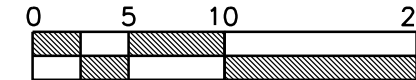
BYPASS BASIN AREA:

NEW AND REPLACED IMPERVIOUS AREAS (BYPASS)

DRIVING SURFACE, SIDEWALKS, CURB AND GUTTER:	3,226 SF (0.074 AC)	
LANDSCAPE AREA (BYPASS):	67 SF (0.002 AC)	
TOTAL BYPASS BASIN AREA:	3,293 SF (0.076 AC)	

TOTAL PROJECT BASIN AREA: 18,431 SF + 3,293 SF = 21,724 SF (0.499 AC)

1"=10'

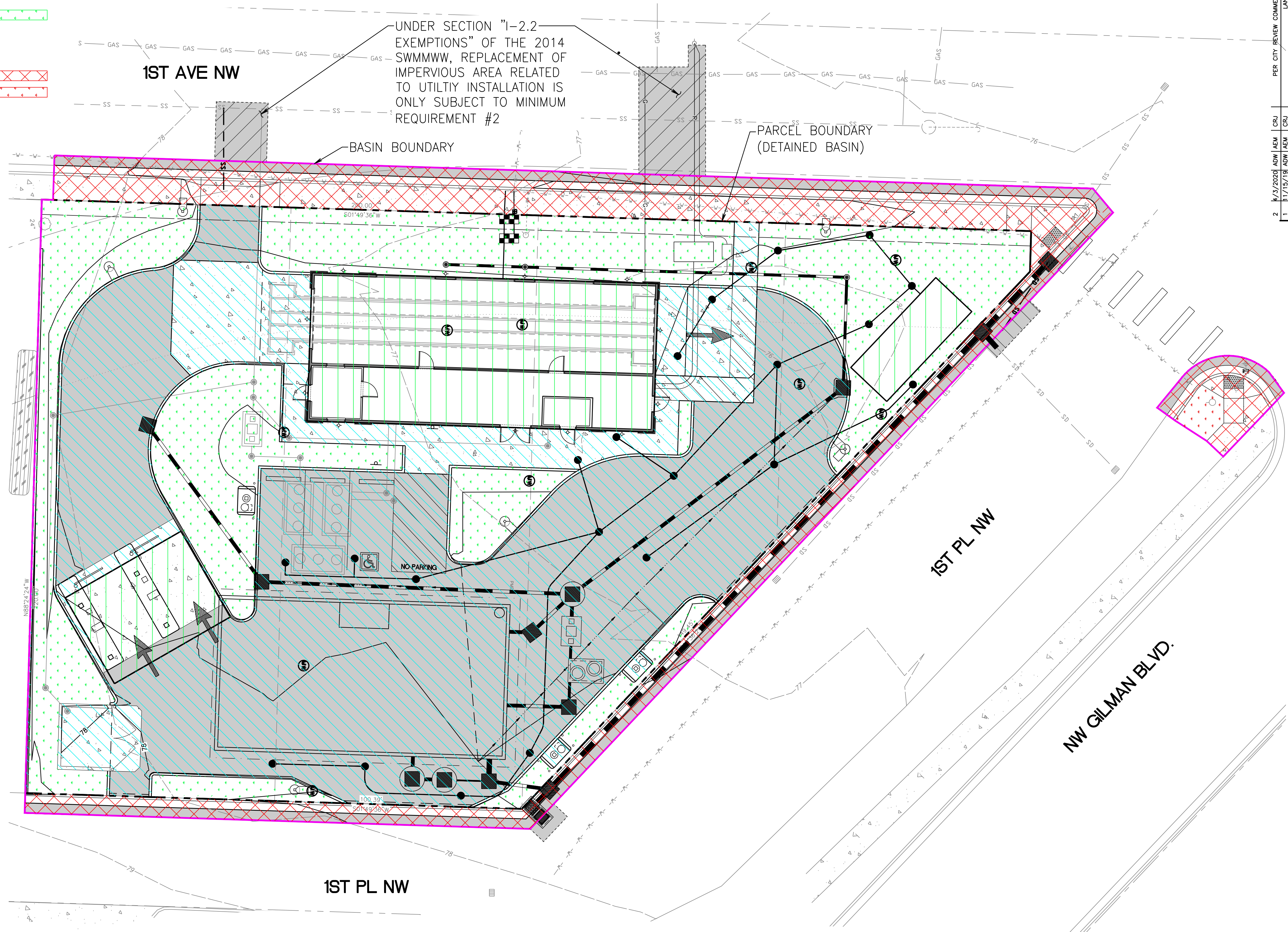


DEVELOPED BASIN MAP

FOR

BROWN BEAR CAR WASH

SE 1/4 OF NE 1/4 OF SEC. 28, TWN. 24 N, RGE. 6 E, W.M.
CITY OF ISSAQUAH, KING COUNTY, WASHINGTON



2 4/23/2020 ADW/AEM CRJ PER CITY REVIEW COMMENTS RECEIVED 02/19/2020

1 11/15/19 ADW/AEM CRJ LAND USE SUBMITTAL

No. Date By Cdd. Appr. Revision

Title:

DEVELOPED BASIN MAP
BROWN BEAR CAR WASH
55 NW GILMAN BLVD.
ISSAQUAH, WA

For: CAR WASH ENTERPRISES, INC.
3977 LEARY WAY NW
SEATTLE, WASHINGTON 98107

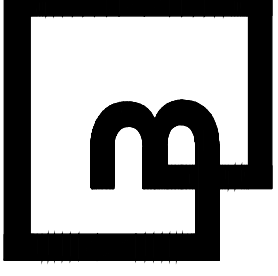
4/3/2020

Scale:
Horizontal
1" = 10'

Vertical
NA

Designed ADW
Drawn ADW
Checked AEM
Approved CRJ
Date 11/15/19

Barghausen
Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222 barghausen.com



Job Number
20693

Sheet
1 of 1



Know what's below.
Call before you dig.
Dial 811

5.3 Performance Standards and Goals

This project proposes to create more than 10,000 square feet of new and replaced impervious surface within a threshold discharge area, and is located outside the City of Issaquah Alternative Flow Control Drainage Basin. This project site's existing surface contains greater than 35 percent impervious surface coverage and is therefore defined as a redevelopment project. The anticipated increase value of the site improvements will likely be greater than 50 percent of the value of existing site improvements; therefore, all new and replaced hard surfaces are considered targeted surfaces. Additionally, the pre-developed condition of the site must be modeled as forested for the purpose of flow control calculations. This project will provide flow control to "Match developed discharge durations to pre-developed duration for the range of predeveloped discharge rates from 50 percent of the 2-year peak flow up to the full 50-year peak flow" per Minimum Requirement No. 7.

Water quality treatment must also be provided per Minimum Requirement No. 6, as this project proposes greater than 5,000 square feet pollution generating hard surface. This site is a commercial project site and is an anticipated high use site, therefore Enhanced treatment must be provided. This project will propose a Bio clean Environmental MWS-Linear Modular Wetland system that will treat stormwater runoff downstream of the proposed detention facility.

Figure 5.3

Drainage Facility

for pretreatment, hydraulic profile, design treatment flow rates, flow bypass, and other criteria.

Table 1-4 lists GULD-approved technologies for pre-treatment, basic, enhance, and phosphorus treatment. This list is also contained in the Approved Materials List and will be updated periodically. Basic treatment and pre-treatment is used prior to infiltration or as part of treatment train (see design manual).

TABLE 1-4 WATER QUALITY TREATMENT OPTIONS				
Product	Pre-Treat	Basic	Enhanced	Phosp.
EMERGING TECHNOLOGIES				
AquaShield Aqua-Swirl System	X			
Baysaver BayFilter®		X		
Contech CDS™ Stormwater Treatment System	X			
WSDOT Compost-Amended Biofiltration Swale		X	X	
Hydro International Downstream Defender	X			
Watertechtonics ecoStorm plus		X		
Contech Filterra® Bioscape™		X	X	X
Contech Filterra® System		X	X	X
Oldcastle FloGard Perk Filter®		X		X
WSDOT Media Filter Drain		X	X	X
Contech Media Filtration System		X		
Bio Clean Environmental MWS-Linear Modular Wetland		X	X	X
Imbrium Systems Stormceptor	X			
Contech StormFilter -PhosphoSorb Media at 1.67 gpm/sq ft		X		X
Contech Stormfilter using ZPG Media		X		
Contech Vortechs System	X			
STORMWATER DESIGN MANUAL				
Infiltration (with pretreatment)		X	X	X
Large sand filter ¹		X	X	X
Large wet pond		X		X
Two-facility treatment train (see manual) ²		X	X	X

¹Private development only. Sand filters not accepted as a City-owned facility.

²Requires basic or linear sand filter as part of the treatment train, also not accepted as a City-owned facility.

Figure 5.4
Table 1-5
Requirements for
On-Site Stormwater
BMPs

TABLE 1-5 REQUIREMENTS FOR ON-SITE STORMWATER BMPs (MR#5)

Surface	How Evaluated	BMPs to be Evaluated for Feasibility		General Criteria ^a
		Projects that trigger MR#1-MR#5	Projects that Trigger MR#6-MR#9	
Lawn/ Landscaped Areas	Required in all projects.	1. Post-Construction Soil Quality and Depth (BMP T5.13; IMC 18.12.140)		De-compact and add topsoil meeting pH and organic criteria to depth of 8 inches.
Roofs	Use BMPs that are determined to be feasible, evaluated in order listed, until full BMP criteria is met.	2a. Full Dispersion (BMP T5.30), <u>or</u> Downspout Full Infiltration Systems (BMP T5.10A).		Full dispersion requires large native growth area: 6.5 times area of roof draining to it. Downspout infiltration requires less area but is subject to soil conditions.
		2b. Rain Gardens (BMP T5.14A), <u>or</u> Bioretention.	Same as MR#1-MR#5 except Bioretention in place of rain gardens.	Area of rain garden or bioretention to be 5% of roof area draining to it, at depth of 6-12 inches. Bioretention adds engineering criteria on design infiltration rate.
		2c. Downspout Dispersion Systems (BMP T5.10B)		Used if dispersion area is moderate (25-50 ft length) using splash blocks or gravel-filled trenches
		2d. Perforated Stub-out Connections (BMP T5.10C)		Used if dispersion area is minimal (<25 ft length) using perforated pipe in 24" wide gravel trench
Other Hard Surfaces (e.g., parking lots, sidewalks)	Use BMPs that are determined to be feasible, evaluated in order listed, until full BMP criteria is met.	3a. Full Dispersion (BMP T5.30)		Full Dispersion: see #2a above.
		3b. Permeable pavement (BMP T5.15), <u>or</u> Rain Gardens (BMP T5.14A)	Same as MR#1-MR#5 except Bioretention in place of rain gardens.	Permeable pavement: All surfaces, except high use, roads >400 ADT, and other infeasibility criteria. Rain gardens/bioretention: see #2b above.
		3c. Sheet Flow Dispersion (BMP T5.12), or Concentrated Flow Dispersion (BMP T5.11)		Sheet flow: min 10 ft or larger vegetated buffer next to parking lot or road. Concentrated flow dispersion requires 50 ft flow path and is limited to 700 sf of hard surface.

^a This is a generalized summary only, and does not reflect the BMP infeasibility criteria or competing needs assessment that may apply to the project and site. See BMP sheets in Ecology Manual for complete criteria.

5.4 Low Impact Development Features

This project triggers Minimum Requirements Nos. 1 through 9 and must either use on-site stormwater management BMPs from List No. 2, or demonstrate compliance with the LID Performance Standard and BMP T5.13. This project will choose to evaluate the feasibility of on-site stormwater management BMPs from List No. 2.

Lawn and Landscaped Areas

1. Soil preservation and Amendment BMP in Volume III, Section 3.1.

Feasible: Post Construction Soil Quality and Depth in accordance with BMP T5.13 in Chapter 5 Volume V of the SWMMWW will be applied to all proposed landscaping areas.

Roofs:

1. Full Dispersion in accordance with BMP T5.30 in Chapter 5 of Volume V of the SWMMWW, or Downspout Full Infiltration Systems in accordance with BMP T5.10A in Section 3.1.1 of Volume III of the SWMMWW.

Infeasible: This project will not preserve 65 percent of the site area as forest or native vegetation. Additionally, infiltration is infeasible for this project due to the project being located within a CARA Class 1, and wellhead protection zone.

2. Bioretention (See Chapter 7 of Volume V of the SWMMWW) facilities that have a minimum horizontally projected surface area below the overflow, which is at least 5 percent of the total surface area draining to it.

Infeasible: Bioretention is infeasible due to the infeasibility of on-site infiltration. The site is located within a CARA Class 1, and a wellhead protection Zone.

3. Downspout Dispersion Systems in accordance with BMP T5.10B in Section 3.1.2, Volume III, of the SWMMWW.

Infeasible: Downspout dispersion systems are infeasible due to the lack of available vegetated area and flow path space.

4. Perforated Stub-out Connections in accordance with BMP T5.10C in Section 3.1.3, Volume III, of the SWMMWW.

Infeasible: Perforated Stub-out Connections are infeasible. All rooftop runoff is proposed to be collected and discharge to a stormwater detention facility designed to meet Minimum Requirement No. 7 of Flow Control Requirements.

Other Hard Surfaces:

1. Full Dispersion in accordance with BMP T5.30 in Chapter, Volume V, of the SWMMWW.

Infeasible: This project will not preserve 65 percent of the site area as forest or native vegetation.

2. Permeable Pavement No. 2 is in accordance with BMP T5.15 in Chapter 5, Volume V, of the SWMMWW.

Infeasible: This site is defined as high use, and therefore does not require the evaluation of permeable pavement. Additionally, this site is not allowed to use infiltration BMPs as it is located within a CARA.

3. Bioretention (See Chapter 7, Volume V of the SWMMWW) facilities that have a minimum horizontally projected surface area below the overflow which is at least 5 percent of the total surface area draining to it.

Infeasible: Bioretention is infeasible due to the infeasibility of on-site infiltration. The site is located within a CARA Class 1, and wellhead protection Zone.

4. Sheet Flow Dispersion in accordance with BMP T5.12, or Concentrated Flow Dispersion in accordance with BMP T5.11 in Chapter 5, Volume V, of the SWMMWW.

Infeasible: The site lacks the available vegetated flow path space for sheet flow dispersion per BMP T5.12, or concentrated flow dispersion per BMP T5.11.

5.5 Flow Control System

This site proposes greater than 10,000 square feet of new and replaced impervious surface and will provide flow control such that "Stormwater discharges shall match developed discharge durations to pre-developed durations for the range of pre-developed discharge rates from 50 percent of the 2-year peak flow up to the full 50-year peak flow."

The site is located within a CARA Class 1 and is not allowed to infiltrate stormwater runoff. A detention vault has been proposed to meet the required flow control standard.

The proposed stormwater detention vault has been sized using WWHM2012.

The pre-developed condition has been modeled as a forested land cover.

The developed condition models all proposed rooftop areas, and other hard surfaces that will drain to the detention facility. Proposed pervious areas will implement BMP T5.13: Post Construction Soil Quality and Depth have been modeled as pasture as allowed by SWMMWW Volume III Appendix C.

Bypass Area

Improvements within the public right-of-way will bypass the detention system, as they cannot be feasibly isolated from the surrounding street surfaces, and collected. WWHM2012 calculation indicate that flow rate durations of the bypass area alone closely match the pre-developed flow rate durations for the entire site.; therefore, it will not be possible or feasible to design a detention system that will meet the flow control standard if the bypass area is modeled as un-detained runoff. Per the 2014 DOE SWMMWW, Volume III – Appendix B, the following conditions for the bypass area must be met:

1. *Runoff from both the bypass area and the flow control facility converges within a quarter-mile downstream of the project site discharge point.*

Response: Runoff from the detained area will discharge to stormwater conveyance that collects runoff from the bypass areas immediately adjacent to the site. The location of convergence is approximately 40 feet downstream of the project site.

2. *The flow control facility is designed to compensate for the uncontrolled bypass area such that the net effect at the point of convergence downstream is the same with or without bypass.*

Response: The flow control facility has been sized to compensate for the uncontrolled bypass area. The detention vault is sized to accept runoff from an area equivalent to the bypass area while meeting the flow control standard. Therefore, the net effect of this compensation will allow the site to meet the flow control duration standard weather the site is modeled with or without the bypass area.

3. *The 100-year peak discharge from the bypass area will not exceed 0.4 cfs*

Response: The 100-Year peak discharge rate from the bypass area does not exceed 0.4 cfs. WWHM2012 calculations of the bypass area flow frequency rates are included in this report.

4. *Runoff from the bypass area will not create a significant adverse impact to downstream drainage systems or properties.*

Response: The existing conditions of the bypass area consist of an almost entirely impervious area. Runoff characteristics within the bypass area will remain relatively

unchanged with the proposed developments, and therefore it is anticipated that the bypass area will not create an observable adverse impact to downstream drainage systems or properties.

5. *Water quality requirements applicable to the bypass area are met.*

Response: The pollution generating hard surface area of the bypass area is approximately 1,036 square feet. Due to site constraints, treatment of an area greater than or equal to the proposed pollution generating hard surfaces within the ROW is proposed to be achieved with a Contech Stormfilter Concrete Catch Basin.

Pump Design

Due to the shallow depth of the downstream conveyance system, this project will require a pump system to be placed downstream of the flow control facility. The pump system has been designed to activate when water within the pump basin reaches a depth equal to IE of the pump basin's inlet pipe, and provides a discharge rate greater than or equal to the anticipated 100-year mitigated flow rate to ensure the prevention of a backwater condition within the vault, and water quality facilities. This will also ensure that gravity flow is maintained between the outlet of the vault and the pump basin. By maintaining gravity flow between the detention facility and the pump basin, the hydraulic residence time of on-site runoff within the detention vault remains equivalent between the proposed pump system, and a system that would depend entirely on gravity flows; therefore, the quantity of stormwater discharge during the pump activation timeframe will be equivalent to the quantity of stormwater discharged through a gravity system during the full pump cycle timeframe.

Figure 5.5
Table 1-1 Project
Screening for
Stormwater Review

Table 1-1 PROJECT SCREENING FOR STORMWATER REVIEW							
Project Type ^b	Screening Thresholds ^a			Minimum Requirements ^a			
	Hard Surfaces		Land Clearing	MR #1-5	MR #6-9	Stormwater Facility Target Surfaces ^d	Pre-Dev Cond.
1. TESC Only	<2000 SF new plus replaced hard surfaces	or	<7000 SF land disturbance	MR #2 – Construction Stormwater Pollution Prevention Plan			
2. New Development – All projects^c	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New and replaced</u> hard surfaces	Forested
3a. Redevelopment - Value of proposed improvements is <50% of value of existing site improvements^c	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New</u> hard surfaces only	Forested
3b. Redevelopment - Value of proposed improvements is >50% of value of existing site improvements^c	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New and replaced</u> hard surfaces	Forested
4a. Transportation redevelopment - New hard surfaces add <50% to existing hard surfaces	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New</u> hard surfaces only	Forested
4b. Transportation redevelopment - New hard surfaces add >50% to existing hard surfaces	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New and replaced</u> hard surfaces	Forested
5. Central Issaquah Alternative Flow Control Area (see Figure 2-5) – All projects	2000-5000 SF new plus replaced hard surfaces	or	7000-32,670 SF land disturbance	✓		--	--
	>5000 SF new plus replaced hard surfaces	or	>32,670 SF land disturbance	✓	✓	<u>New</u> hard surfaces only	Existing

^aSee Chapter 2 for requirements, following the flow charts in Figures 2-4 and 2-4 and referring to Minimum Requirements for specific criteria.

^bSee Chapter 2.1 for additional exemptions.

^cNew Development are sites with <35% existing impervious coverage; Redevelopment are sites with >35% existing impervious coverage.

^dStormwater Facility Target Surfaces: for flow control and water quality treatment. Onsite Stormwater BMPs required under MR #5.

Figure 5.6
Central Issaquah Area
Alternative Flow
Control Standard Map

Figure 2-5. Central Issaquah Area Alternative Flow Control Standard Map

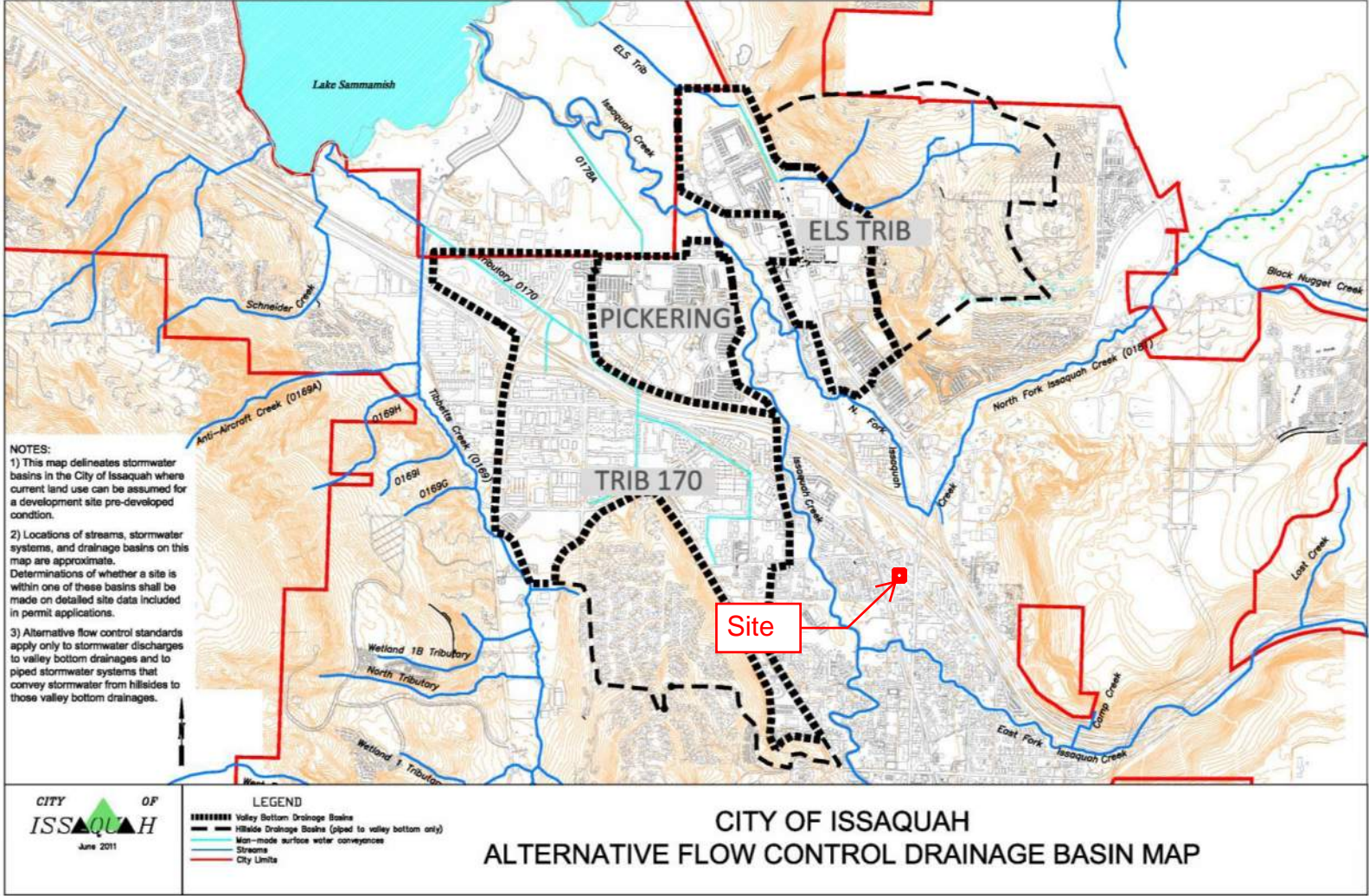


Figure 5.7 Detention Sizing Calculations



WWHM2012
PROJECT REPORT

General Model Information

Project Name: 20693-Detention 2020-4-1
Site Name: Brown Bear Car Wash
Site Address: 55 NW Gilman BLVD
City: Issaquah, WA
Report Date: 4/1/2020
Gage: Seatac
Data Start: 1948/10/01
Data End: 2009/09/30
Timestep: 15 Minute
Precip Scale: 1.333
Version Date: 2019/09/13
Version: 4.2.17

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass: No

GroundWater: No

Pervious Land Use acre
C, Forest, Flat 0.499

Pervious Total 0.499

Impervious Land Use acre

Impervious Total 0

Basin Total 0.499

Element Flows To:		
Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
C, Pasture, Flat	0.122
Pervious Total	0.122
Impervious Land Use	acre
ROADS FLAT	0.311
ROOF TOPS FLAT	0.066
Impervious Total	0.377
Basin Total	0.499

Element Flows To:		
Surface	Interflow	Groundwater
Vault 1	Vault 1	

Routing Elements

Predeveloped Routing

Mitigated Routing

Vault 1

Width: 41.5 ft.
Length: 41.5 ft.
Depth: 7 ft.
Discharge Structure
Riser Height: 6 ft.
Riser Diameter: 18 in.
Orifice 1 Diameter: 0.45 in. Elevation: 0 ft.
Orifice 2 Diameter: 0.8 in. Elevation: 4.002 ft.
Orifice 3 Diameter: 0.59 in. Elevation: 5.03375 ft.
Element Flows To:
Outlet 1 Outlet 2

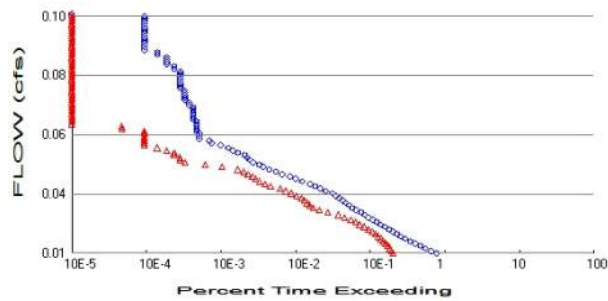
Vault Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.039	0.000	0.000	0.000
0.0778	0.039	0.003	0.001	0.000
0.1556	0.039	0.006	0.002	0.000
0.2333	0.039	0.009	0.002	0.000
0.3111	0.039	0.012	0.003	0.000
0.3889	0.039	0.015	0.003	0.000
0.4667	0.039	0.018	0.003	0.000
0.5444	0.039	0.021	0.004	0.000
0.6222	0.039	0.024	0.004	0.000
0.7000	0.039	0.027	0.004	0.000
0.7778	0.039	0.030	0.004	0.000
0.8556	0.039	0.033	0.005	0.000
0.9333	0.039	0.036	0.005	0.000
1.0111	0.039	0.040	0.005	0.000
1.0889	0.039	0.043	0.005	0.000
1.1667	0.039	0.046	0.005	0.000
1.2444	0.039	0.049	0.006	0.000
1.3222	0.039	0.052	0.006	0.000
1.4000	0.039	0.055	0.006	0.000
1.4778	0.039	0.058	0.006	0.000
1.5556	0.039	0.061	0.006	0.000
1.6333	0.039	0.064	0.007	0.000
1.7111	0.039	0.067	0.007	0.000
1.7889	0.039	0.070	0.007	0.000
1.8667	0.039	0.073	0.007	0.000
1.9444	0.039	0.076	0.007	0.000
2.0222	0.039	0.080	0.007	0.000
2.1000	0.039	0.083	0.008	0.000
2.1778	0.039	0.086	0.008	0.000
2.2556	0.039	0.089	0.008	0.000
2.3333	0.039	0.092	0.008	0.000
2.4111	0.039	0.095	0.008	0.000
2.4889	0.039	0.098	0.008	0.000
2.5667	0.039	0.101	0.008	0.000
2.6444	0.039	0.104	0.008	0.000
2.7222	0.039	0.107	0.009	0.000
2.8000	0.039	0.110	0.009	0.000
2.8778	0.039	0.113	0.009	0.000

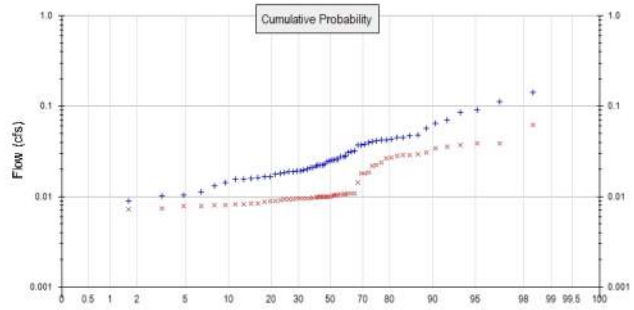
2.9556	0.039	0.116	0.009	0.000
3.0333	0.039	0.119	0.009	0.000
3.1111	0.039	0.123	0.009	0.000
3.1889	0.039	0.126	0.009	0.000
3.2667	0.039	0.129	0.009	0.000
3.3444	0.039	0.132	0.010	0.000
3.4222	0.039	0.135	0.010	0.000
3.5000	0.039	0.138	0.010	0.000
3.5778	0.039	0.141	0.010	0.000
3.6556	0.039	0.144	0.010	0.000
3.7333	0.039	0.147	0.010	0.000
3.8111	0.039	0.150	0.010	0.000
3.8889	0.039	0.153	0.010	0.000
3.9667	0.039	0.156	0.010	0.000
4.0444	0.039	0.159	0.014	0.000
4.1222	0.039	0.163	0.017	0.000
4.2000	0.039	0.166	0.019	0.000
4.2778	0.039	0.169	0.020	0.000
4.3556	0.039	0.172	0.021	0.000
4.4333	0.039	0.175	0.023	0.000
4.5111	0.039	0.178	0.024	0.000
4.5889	0.039	0.181	0.025	0.000
4.6667	0.039	0.184	0.026	0.000
4.7444	0.039	0.187	0.026	0.000
4.8222	0.039	0.190	0.027	0.000
4.9000	0.039	0.193	0.028	0.000
4.9778	0.039	0.196	0.029	0.000
5.0556	0.039	0.199	0.031	0.000
5.1333	0.039	0.203	0.033	0.000
5.2111	0.039	0.206	0.035	0.000
5.2889	0.039	0.209	0.037	0.000
5.3667	0.039	0.212	0.038	0.000
5.4444	0.039	0.215	0.039	0.000
5.5222	0.039	0.218	0.040	0.000
5.6000	0.039	0.221	0.042	0.000
5.6778	0.039	0.224	0.043	0.000
5.7556	0.039	0.227	0.044	0.000
5.8333	0.039	0.230	0.045	0.000
5.9111	0.039	0.233	0.046	0.000
5.9889	0.039	0.236	0.047	0.000
6.0667	0.039	0.239	0.321	0.000
6.1444	0.039	0.242	0.918	0.000
6.2222	0.039	0.246	1.686	0.000
6.3000	0.039	0.249	2.552	0.000
6.3778	0.039	0.252	3.437	0.000
6.4556	0.039	0.255	4.268	0.000
6.5333	0.039	0.258	4.977	0.000
6.6111	0.039	0.261	5.522	0.000
6.6889	0.039	0.264	5.903	0.000
6.7667	0.039	0.267	6.260	0.000
6.8444	0.039	0.270	6.568	0.000
6.9222	0.039	0.273	6.862	0.000
7.0000	0.039	0.276	7.144	0.000
7.0778	0.039	0.279	7.415	0.000
7.1556	0.000	0.000	7.677	0.000

Analysis Results

POC 1



+ Predeveloped x Mitigated



Predeveloped Landuse Totals for POC #1

Total Pervious Area: 0.499
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1

Total Pervious Area: 0.122
Total Impervious Area: 0.377

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.02584
5 year	0.044242
10 year	0.059653
25 year	0.083179
50 year	0.103896
100 year	0.127561

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.012515
5 year	0.020665
10 year	0.027759
25 year	0.039021
50 year	0.049334
100 year	0.061525

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.037	0.009
1950	0.042	0.011
1951	0.048	0.039
1952	0.016	0.008
1953	0.014	0.010
1954	0.020	0.009
1955	0.031	0.009
1956	0.028	0.022
1957	0.025	0.009
1958	0.023	0.010

1959	0.019	0.009
1960	0.042	0.028
1961	0.019	0.011
1962	0.013	0.008
1963	0.019	0.010
1964	0.025	0.011
1965	0.021	0.018
1966	0.016	0.010
1967	0.043	0.010
1968	0.022	0.010
1969	0.022	0.009
1970	0.019	0.010
1971	0.026	0.010
1972	0.037	0.030
1973	0.018	0.018
1974	0.024	0.010
1975	0.032	0.009
1976	0.022	0.010
1977	0.015	0.008
1978	0.018	0.010
1979	0.011	0.007
1980	0.070	0.031
1981	0.016	0.010
1982	0.045	0.023
1983	0.026	0.010
1984	0.016	0.008
1985	0.010	0.008
1986	0.040	0.011
1987	0.038	0.026
1988	0.017	0.009
1989	0.010	0.008
1990	0.141	0.029
1991	0.057	0.027
1992	0.021	0.010
1993	0.019	0.008
1994	0.009	0.007
1995	0.025	0.011
1996	0.064	0.037
1997	0.046	0.036
1998	0.022	0.008
1999	0.085	0.028
2000	0.018	0.010
2001	0.006	0.007
2002	0.032	0.014
2003	0.043	0.009
2004	0.045	0.038
2005	0.028	0.010
2006	0.028	0.022
2007	0.113	0.062
2008	0.091	0.034
2009	0.040	0.018

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	0.1408	0.0624
2	0.1127	0.0391
3	0.0908	0.0384

4	0.0852	0.0369
5	0.0699	0.0356
6	0.0641	0.0344
7	0.0570	0.0308
8	0.0478	0.0295
9	0.0465	0.0286
10	0.0451	0.0285
11	0.0445	0.0279
12	0.0427	0.0272
13	0.0426	0.0262
14	0.0420	0.0235
15	0.0417	0.0222
16	0.0401	0.0220
17	0.0397	0.0185
18	0.0383	0.0181
19	0.0375	0.0179
20	0.0375	0.0143
21	0.0322	0.0109
22	0.0315	0.0109
23	0.0310	0.0107
24	0.0279	0.0106
25	0.0276	0.0105
26	0.0275	0.0105
27	0.0261	0.0104
28	0.0259	0.0104
29	0.0254	0.0104
30	0.0252	0.0102
31	0.0250	0.0100
32	0.0241	0.0100
33	0.0229	0.0100
34	0.0224	0.0099
35	0.0224	0.0099
36	0.0222	0.0098
37	0.0216	0.0097
38	0.0210	0.0096
39	0.0209	0.0096
40	0.0201	0.0096
41	0.0195	0.0095
42	0.0192	0.0095
43	0.0190	0.0095
44	0.0189	0.0093
45	0.0188	0.0093
46	0.0182	0.0092
47	0.0181	0.0090
48	0.0176	0.0089
49	0.0165	0.0088
50	0.0164	0.0088
51	0.0163	0.0084
52	0.0158	0.0083
53	0.0155	0.0082
54	0.0155	0.0082
55	0.0142	0.0081
56	0.0132	0.0080
57	0.0113	0.0079
58	0.0104	0.0079
59	0.0100	0.0074
60	0.0090	0.0073
61	0.0058	0.0069

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.0129	16358	4327	26	Pass
0.0138	13956	4122	29	Pass
0.0148	11777	3925	33	Pass
0.0157	9989	3664	36	Pass
0.0166	8470	3416	40	Pass
0.0175	7328	3183	43	Pass
0.0184	6297	2937	46	Pass
0.0194	5461	2723	49	Pass
0.0203	4836	2494	51	Pass
0.0212	4278	2276	53	Pass
0.0221	3809	2023	53	Pass
0.0230	3343	1783	53	Pass
0.0239	2947	1547	52	Pass
0.0249	2592	1358	52	Pass
0.0258	2284	1169	51	Pass
0.0267	2016	962	47	Pass
0.0276	1807	792	43	Pass
0.0285	1604	579	36	Pass
0.0295	1379	440	31	Pass
0.0304	1222	368	30	Pass
0.0313	1110	332	29	Pass
0.0322	1004	305	30	Pass
0.0331	911	280	30	Pass
0.0341	814	253	31	Pass
0.0350	730	219	30	Pass
0.0359	659	187	28	Pass
0.0368	542	159	29	Pass
0.0377	450	132	29	Pass
0.0387	389	98	25	Pass
0.0396	332	83	25	Pass
0.0405	260	70	26	Pass
0.0414	215	62	28	Pass
0.0423	177	56	31	Pass
0.0432	141	49	34	Pass
0.0442	116	43	37	Pass
0.0451	94	36	38	Pass
0.0460	79	22	27	Pass
0.0469	69	13	18	Pass
0.0478	57	7	12	Pass
0.0488	52	6	11	Pass
0.0497	48	6	12	Pass
0.0506	44	5	11	Pass
0.0515	36	5	13	Pass
0.0524	31	4	12	Pass
0.0534	27	3	11	Pass
0.0543	21	2	9	Pass
0.0552	16	2	12	Pass
0.0561	15	2	13	Pass
0.0570	11	2	18	Pass
0.0579	11	2	18	Pass
0.0589	11	2	18	Pass
0.0598	10	2	20	Pass
0.0607	10	1	10	Pass

0.0616	10	1	10	Pass
0.0625	10	0	0	Pass
0.0635	10	0	0	Pass
0.0644	9	0	0	Pass
0.0653	9	0	0	Pass
0.0662	9	0	0	Pass
0.0671	9	0	0	Pass
0.0681	9	0	0	Pass
0.0690	9	0	0	Pass
0.0699	8	0	0	Pass
0.0708	8	0	0	Pass
0.0717	7	0	0	Pass
0.0727	7	0	0	Pass
0.0736	7	0	0	Pass
0.0745	7	0	0	Pass
0.0754	7	0	0	Pass
0.0763	6	0	0	Pass
0.0772	6	0	0	Pass
0.0782	6	0	0	Pass
0.0791	6	0	0	Pass
0.0800	6	0	0	Pass
0.0809	6	0	0	Pass
0.0818	6	0	0	Pass
0.0828	6	0	0	Pass
0.0837	5	0	0	Pass
0.0846	5	0	0	Pass
0.0855	4	0	0	Pass
0.0864	4	0	0	Pass
0.0874	4	0	0	Pass
0.0883	4	0	0	Pass
0.0892	3	0	0	Pass
0.0901	3	0	0	Pass
0.0910	2	0	0	Pass
0.0919	2	0	0	Pass
0.0929	2	0	0	Pass
0.0938	2	0	0	Pass
0.0947	2	0	0	Pass
0.0956	2	0	0	Pass
0.0965	2	0	0	Pass
0.0975	2	0	0	Pass
0.0984	2	0	0	Pass
0.0993	2	0	0	Pass
0.1002	2	0	0	Pass
0.1011	2	0	0	Pass
0.1021	2	0	0	Pass
0.1030	2	0	0	Pass
0.1039	2	0	0	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume: 0 acre-feet

On-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

Off-line facility target flow: 0 cfs.

Adjusted for 15 min: 0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Vault 1 POC	<input type="checkbox"/>	86.37			<input type="checkbox"/>	0.00			
Total Volume Infiltrated		86.37	0.00	0.00		0.00	0.00	0%	No Treat Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Failed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

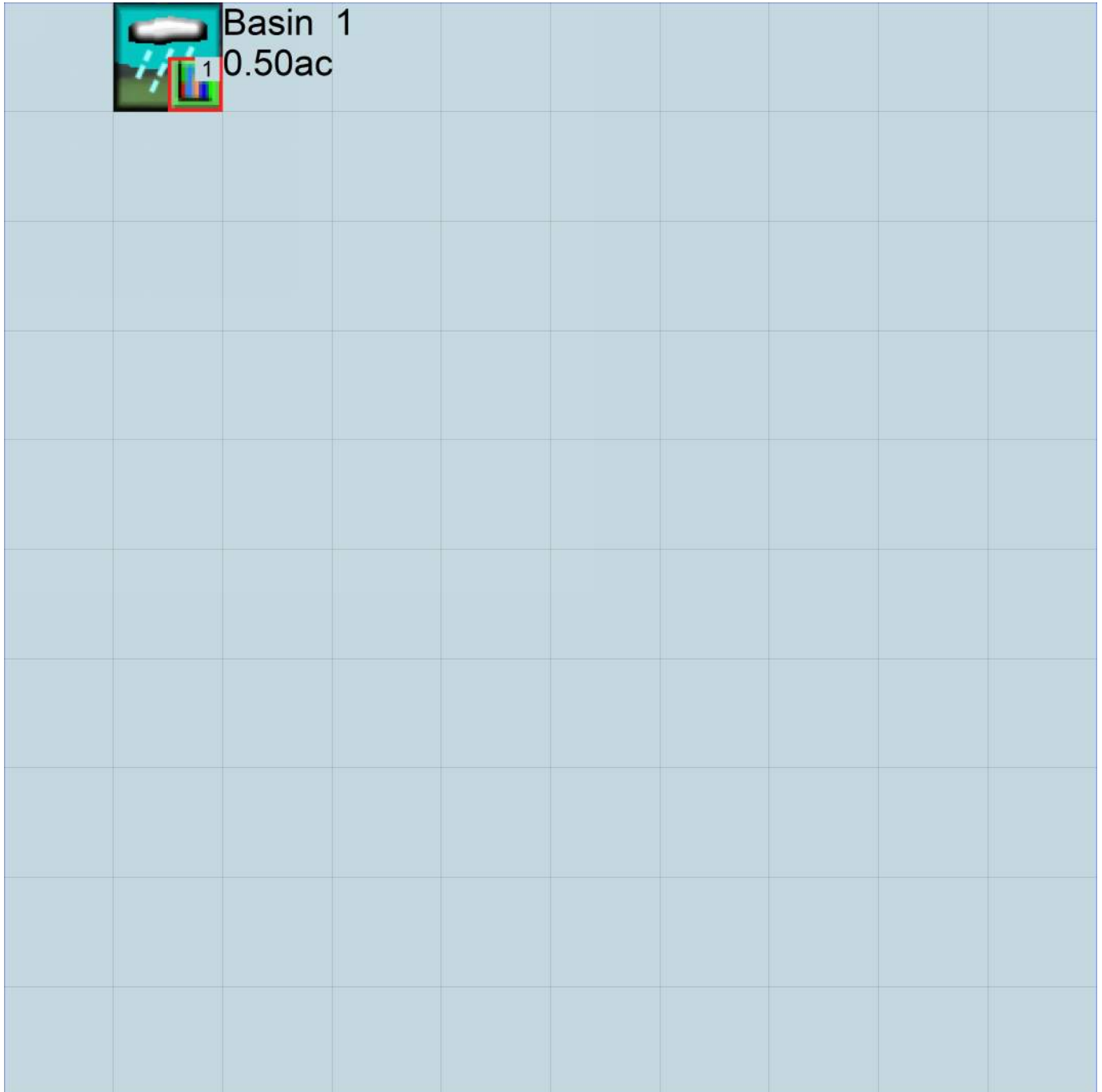
No PERLND changes have been made.

IMPLND Changes

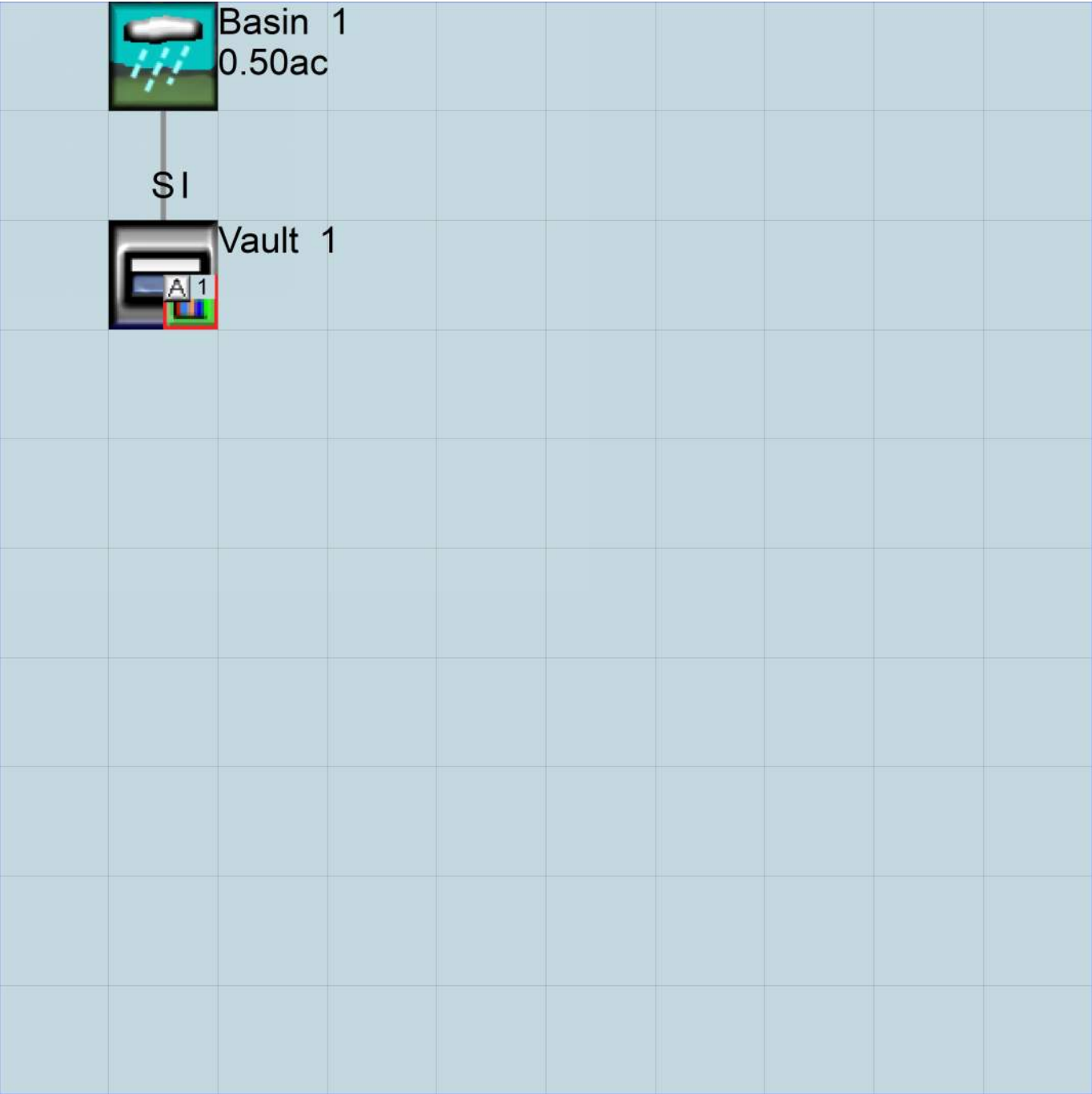
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Disclaimer

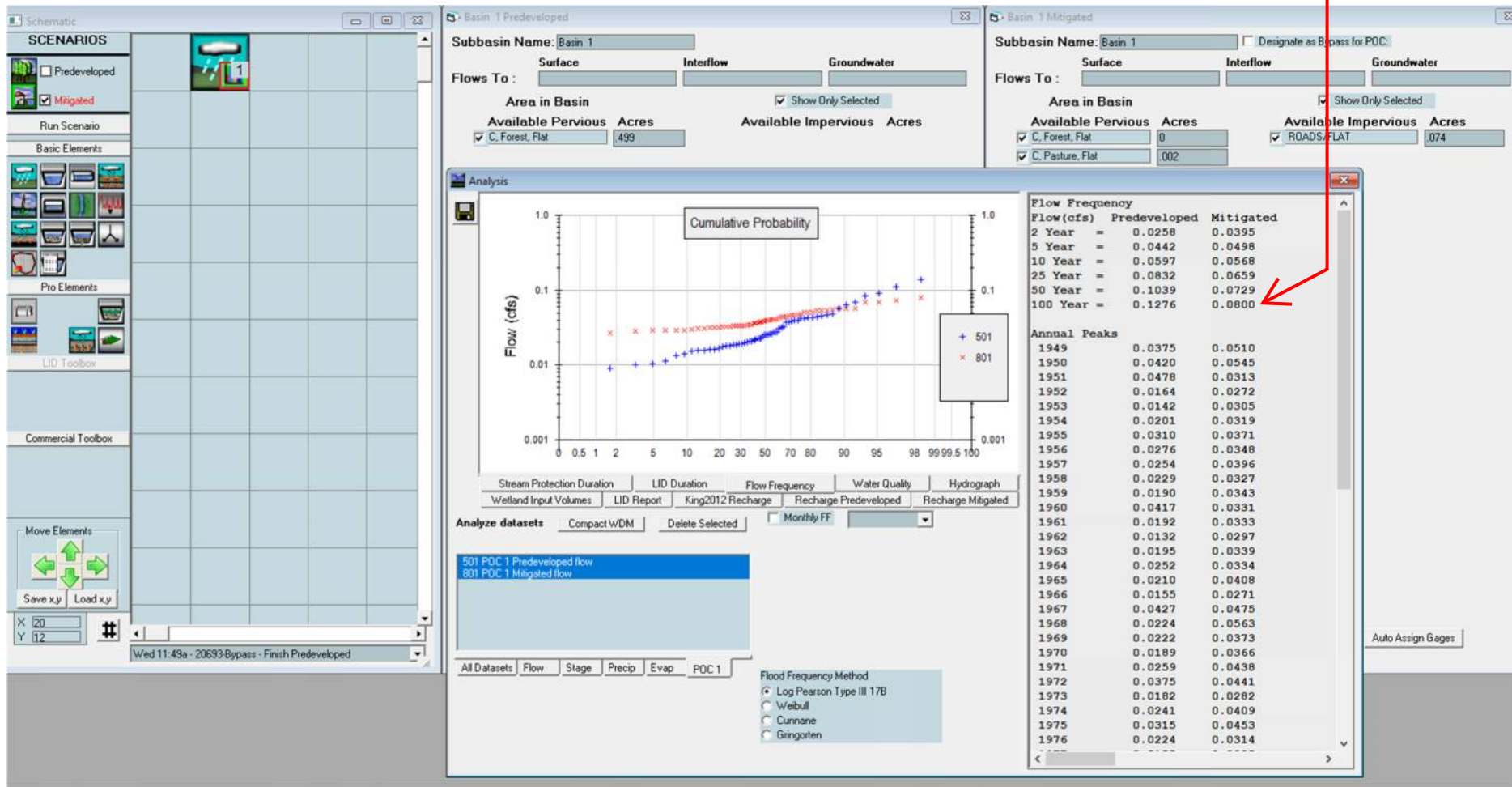
Legal Notice

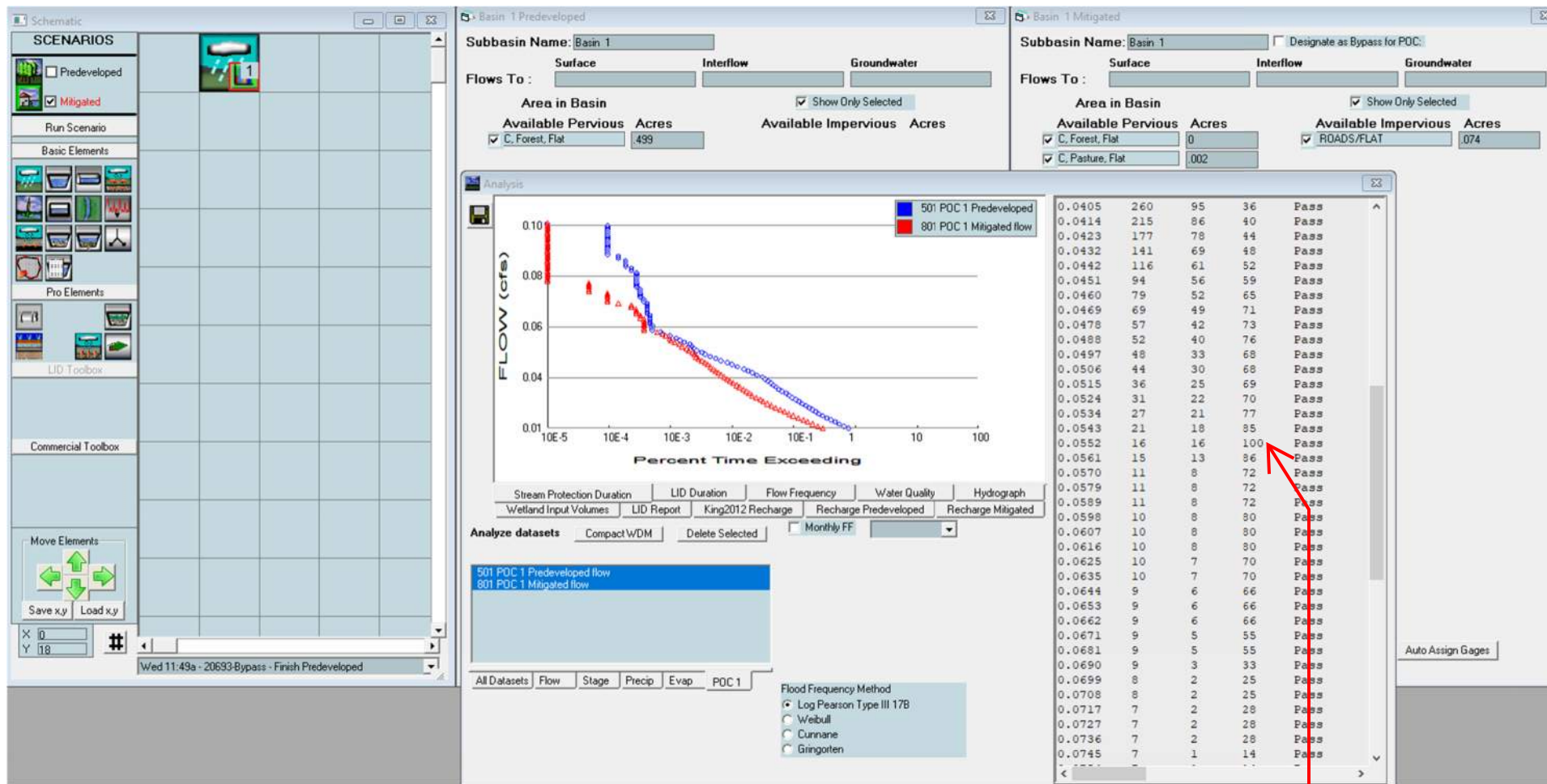
This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages. Software Copyright © by : Clear Creek Solutions, Inc. 2005-2020; All Rights Reserved.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

Figure 5.8 Bypass Runoff Calculations





Bypass Areas alone matches entire pre-developed site. Cannot model as "bypass" in detention calcs.

5.6 Water Quality System

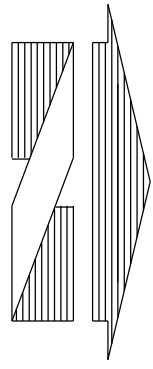
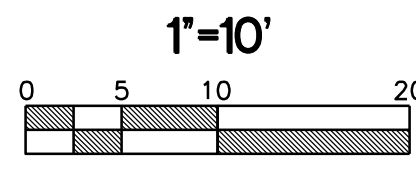
The project is defined as a commercial project, on a high use site, and proposes greater than 5,000 square feet of new and replaced pollution generating hard surface area. Enhanced treatment, and phosphorus removal is required to be provided in this project's stormwater design. Enhanced treatment, and phosphorus removal will be provided by a Bio clean Environmental MWS-Linear Modular Wetland system that will treat stormwater runoff off-line and upstream of the proposed detention facility. Additionally oil control will be provided by an off-line oil/water separator located upstream of the proposed treatment facility.

ROW PGHS

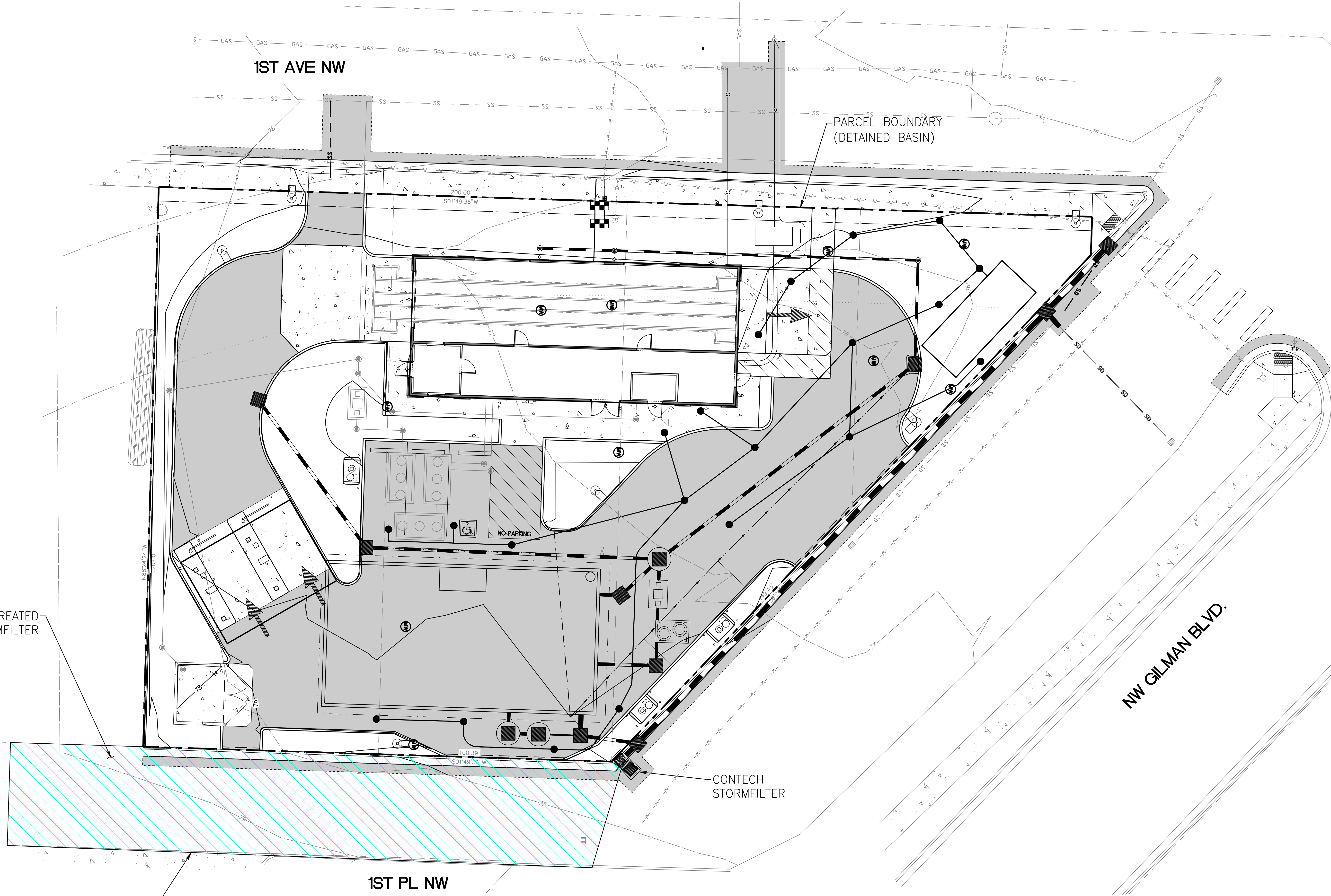
All runoff from new and replaced pollution generating hard surfaces within the right-of-way cannot be feasibly isolated and treated from runoff of the adjacent road surfaces. This project will provide treatment for an area within the right-of-way greater than or equal to the proposed new and replaced pollution generating hard surfaces that will bypass the on-site facility. Treatment within the right-of-way will be provided by a Contech Stormfilter Catch basin.

Figure 5.9 Contech WQ Basin Map





CONTECH WQ BASIN MAP
FOR
BROWN BEAR CAR WASH
SE 1/4 OF NE 1/4 OF SEC. 28, TWN. 24 N, RGE. 6 E, W.M.
CITY OF ISSAQUAH, KING COUNTY, WASHINGTON



PER CITY REVIEW COMMENTS RECEIVED 02/19/2020			
LAND USE SUBMITTAL			
No.	Date	By	Appr.
2	4/3/2020	ADW / AEM	CRJ
1	11/15/19	ADW / AEM	CRJ

Title:
CONTECH WQ BASIN MAP
BROWN BEAR CAR WASH
55 NW GILMAN BLVD.
ISSAQUAH, WA

For:
CAR WASH ENTERPRISES, INC.
3977 LEARY WAY NW
SEATTLE, WASHINGTON 98107

Scale:
Horizontal
1" = 10'
Vertical
NA

Designed ADW
Drawn ADW
Checked AEM
Approved CRJ
Date 11/15/19

Barghausen
Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032
425.251.6222
barghausen.com

Job Number
20693

Sheet
1 of 1

5.7 Conveyance System Analysis and Design

All proposed conveyance systems are anticipated to provide adequate capacity for on-site runoff flows. Conveyance system calculations may be provided upon a subsequent submittal at the request of the City of Issaquah.

Tab 6.0

6.0 CONSTRUCTION STORMWATER POLLUTION PREVENTION PLAN

THE FOLLOWING IS A LIST OF THE TWELVE SWPPP ELEMENTS AND HOW THEY HAVE BEEN ADDRESSED FOR THIS PROJECT:

Element No. 1 - Preserve Vegetation / Mark Clearing Limits: Clearing Limits will be delineated on the engineering plans and will be flagged in the field.

Element No. 2 - Establish Construction Access: A stabilized gravel construction entrance will be shown on the engineering plans. Construction access will be taken from the Alley located along the project's east boundary.

Element No. 3 - Control Flow Rates: A temporary sediment ponds will be shown on the engineering plans. Once the permanent detention facilities are constructed the temporary sediment ponds can be removed. The permanent facilities can be used throughout the remainder of construction.

Element No. 4 - Install Sediment Controls: Silt fence will be shown on the engineering plans for perimeter protection. In addition, temporary ditches to divert runoff to the sediment pond will be shown on the engineering plans.

Element No. 5 - Stabilize Soils: Cover measures will be addressed in the TESC notes on the engineering plans.

Element No. 6 - Protect Slopes: There are no significant slopes onsite, existing or proposed that require additional measures beyond the soil stabilization measures to be shown on the engineering plans.

Element No. 7 - Protect Permanent Drain Inlets: A detail for catch basin inserts will be shown on the final engineering plans along with a note specifying that they be installed once the permanent storm system is completed. A note will also be included that the contractor shall keep public roadways clear of dirt and debris.

Element No. 8 - Stabilize Channels and Outlets: Notes regarding outfall protection will be shown on the engineering plans. Temporary ditches shall be armored with rip rap for slopes greater than 5 percent.

Element No. 9 - Control Pollutants: A note will be added to the engineering plans that the contractor shall dispose of all pollutants and waste materials in a safe and timely manner.

Element No. 10 - Control Dewatering: Notes will be added to the engineering plans stating that water in underground utility trenches or low spots are to be routed to the temporary sediment pond via temporary ditches or perforated rock drains.

Element No. 11 - Maintain Best Management Practices Once the engineering plans are completed the contractor shall maintain all erosion control measures in accordance with City of Issaquah and manufactures recommendations. In addition, the contractor shall maintain a stockpile of erosion control materials onsite.

Element No. 12 - Manage the Project: Once the engineering plans are completed, the clearing, grading, and seasonal work shall be performed in accordance with the City of Issaquah. The contractor shall inspect, maintain, and repair all BMPs as needed to assure continued performance of their intended function. In addition to the engineering plans the contractor will be required to follow and maintain the Construction SWPPP which has been prepared according to Department of

Ecology NPDES Requirements. The completed SWPPP and TESC Plans will be provided during Final Engineering Review.

Element No. 13 – Protect Low Impact Development BMPs: Areas that apply BMP T5.13: Post Construction Soil Quality and Depth must be protected from vehicular compaction and excessive foot traffic.

Tab 7.0

7.0 SPECIAL REPORTS AND STUDIES

- 1) *Geotechnical Engineering Report
Brown Bear Car Wash
55 Northwest Gilman Boulevard
Issaquah, Washington*

Prepared by: Aspect Consulting
 710 2nd Avenue, Suite 500
 Seattle, WA 98104
 Tel: (206) 780-7727

GEOTECHNICAL ENGINEERING REPORT

BROWN BEAR CAR WASH

55 Northwest Gilman Boulevard
Issaquah, Washington

Prepared for: Car Wash Enterprises, Inc.

Project No. 080109 • November 7, 2019 DRAFT



e a r t h + w a t e r



GEOTECHNICAL ENGINEERING REPORT

BROWN BEAR CAR WASH

55 Northwest Gilman Boulevard
Issaquah, Washington

Prepared for: Car Wash Enterprises, Inc.

Project No. 080109 • November 7, 2019 • DRAFT

Aspect Consulting, LLC



Rory Kilkenny, PE
Geotechnical Engineer
rkilkenny@aspectconsulting.com

Henry H. Haselton, PE
Principal Geotechnical Engineer
hhaselton@aspectconsulting.com

V:\080109 Car Wash Enterprises\Deliverables\001-12 Gilman Blvd\Geotechnical Study\DRAFT\Issaquah Brown Bear_DRAFT_20191107.doc

Contents

1	Introduction	1
1.1	Project Description	1
2	Site Conditions	2
2.1	Surface	2
2.2	Subsurface Conditions	2
2.2.1	General Geology	2
2.2.2	Stratigraphy	2
2.2.3	Groundwater.....	3
2.2.4	Critical/Geologically Hazardous Areas	3
3	Seismic Hazard Evaluation.....	4
3.1	Seismic Design Parameters	4
3.2	Liquefaction Susceptibility	5
3.3	Surficial Ground Rupture	5
4	Geotechnical Engineering Conclusions and Recommendations	6
4.1	Shallow Foundations on Fill.....	6
4.1.1	Allowable Bearing Pressure.....	6
4.1.2	Settlement	6
4.1.3	Lateral Resistance	6
4.2	Slabs-on-Grade	6
4.3	Construction Dewatering	7
4.4	Pavement Design and Construction Considerations.....	7
4.5	Stormwater Infiltration.....	7
5	Earthwork Considerations and Recommendations	8
5.1	Temporary Excavation Slopes.....	8
5.2	Subgrade Preparation	8
5.2.1	Shallow Foundations	8
5.2.2	Slabs-on-Grade and Pavements.....	9
5.2.3	Pavement	9
5.3	Structural Fill	9
5.4	Utility Bedding and Backfill	10
5.5	Temporary Erosion and Sedimentation Control	10
5.6	Wet Weather Construction.....	11

6	Additional Design and Construction Monitoring	12
7	References	13
8	Limitations.....	14

List of Tables

1	Seismic Design Parameters	5
----------	--	----------

List of Figures

1	Site Location Map
2	Geotechnical Explorations Plan

List of Appendices

A	Subsurface Explorations
B	Report Limitations and Guidelines for Use

1 Introduction

This report presents the results of a geotechnical engineering study completed by Aspect Consulting, LLC (Aspect) on behalf of Car Wash Enterprises, Inc. (CWE) to fulfill the City of Issaquah requirement for a Soils Report for the Brown Bear Car Wash redevelopment (Project) located at 55 NW Gilman Blvd in Issaquah, Washington (Site; Figure 1). This report is intended to be used as an attachment for the City of Issaquah Land Use permit; it is for planning purposes only and not to be used as a stand-alone document.

This report summarizes explorations and geotechnical data collected to date, and presents our geotechnical engineering conclusions and recommendations based on the geotechnical data and current building concepts. The information and recommendations presented in this report are intended to assist the design team in the selection of foundation alternatives, construction methods, and to inform construction cost estimates for the Project.

1.1 Project Description

The Site has a history of use as a gasoline service station and car care facility. Environmental impacts are present in the Site soil and groundwater as a result of the historical operations. CWE has been conducting an environmental remediation in conjunction with plans to redevelop the Site as a car wash facility. Previous cleanup efforts included excavation of impacts to depths of 13 feet below ground surface and backfilling with clean fill, while future cleanup efforts will likely include the installation of an air sparging/soil vapor extraction (AS/SVE) system to treat deeper impacts. The current use of the site is a level gravel pad.

The proposed redevelopment of the Site includes the design and construction of a new Brown Bear Car Wash. The proposed 3,500 square foot car wash building is expected to consist of a single-story structure supported by shallow spread or strip footings bearing directly on the fill placed during the previous cleanup efforts. Foundation loads are expected to be typical of a building of this type and size. Small amounts of subsurface grading are expected to be required to install below-grade utilities and to manage Site drainage. Aspect's current understanding of the proposed development can be found on Figure 2.

2 Site Conditions

2.1 Surface

Current Site surface conditions consist a generally flat gravel pad, which has been backfilled after a recent remedial excavation. The western edge of the Site is bound by 1st Avenue NW. The eastern and northern edge of the Site is bound by an alley. The southern edge of the Site is bound by the Valvoline Instant Oil Change property.

2.2 Subsurface Conditions

The subsurface conditions at the Site were inferred from our review of geologic maps and explorations advanced at the Site by Aspect. The explorations by Aspect consisted of two hollow-stem auger borings. The location of these borings is shown on Figure 2. A detailed description of the exploration methods used, and our exploration logs are provided in Appendix A.

2.2.1 *General Geology*

The geologic map of Issaquah maps the Site as being underlain by Holocene Fan deposits (Booth, 2006). These deposits generally consist of boulders, cobbles, sand, and diamict deposited in a lobate form where streams emerge from confining valleys, and the reduced gradients cause some of their sediment loads to be deposited. These units generally grade with Holocene alluvium deposits.

2.2.2 *Stratigraphy*

Based on the completed subsurface explorations, we grouped the Site soils into two units: fill, and alluvium. Based on our understanding of the Site and our explorations, fill was placed to backfill the Site from a recent environmental remediation excavation a raise grades back to ground surface, as needed, throughout the Site.

The composition and distribution of these units are summarized below. For more detailed information regarding the composition and distribution of these units, please refer to the exploration logs provided in Appendix A.

Fill

Up to about 13 feet of fill was observed in our explorations ASB-01 and ASB-02. The fill typically consisted of medium dense to very dense, moist, brown and gray, silty gravel with sand (GM).

Alluvium

Alluvium was observed in both borings, AB-01 and AB-02 from depths of about 13 feet to the termination depths of the borings. The outwash generally consisted of medium dense to very dense, wet, brown and gray, gravel and sand with varying amount of silt

(GM and SM). A two-foot-thick layer of medium stiff silt with sand was also encountered from 13 to 15 feet below ground surface in ASB-01,

2.2.3 *Groundwater*

Groundwater levels were inferred from sample moisture at the time of drilling to be approximately 12 to 15 feet bgs. Groundwater levels at the Site are expected to fluctuate seasonally with changes in precipitation, Site usage, and other factors.

2.2.4 *Critical/Geologically Hazardous Areas*

Typical critical and geologically hazardous areas present in the Puget Sound area include landslide, erosion, liquefaction, wetland, and fault ground rupture critical/hazard areas. Based on the Site location, topography, surface conditions, and subsurface conditions, we conclude that of these critical/geologically hazardous areas, only liquefaction is relevant to the Site. The Washington Geologic Information Portal (DNR, 2019) indicates that of these hazard areas, the Site has a moderate to high susceptibility to liquification. The liquefaction susceptibility is further described in Section 3.2.

The Site is located in a seismically active region and subject to strong ground shaking during earthquakes. Accordingly, new structures should be designed to account for ground shaking in accordance with the current applicable building codes.

3 Seismic Hazard Evaluation

The Site is located within a region of active tectonic forces associated with the interaction of the offshore Juan de Fuca Plate, the Pacific Plate, and the onshore North American Plate. Seismic hazards include strong ground shaking from earthquakes associated with the Seattle Fault Zone (SFZ), the Cascadia Subduction Zone (CSZ), and deep intraslab earthquakes.

The SFZ is a zone of east-west thrust faults. The U.S. Geological Survey (USGS) estimates that the SFZ can produce earthquakes of magnitude 7.0 or greater. The last large earthquake on this fault system occurred about 1,100 years ago and resulted in up to 27 feet of uplift in parts of West Seattle.

The CSZ lies along the boundary of the converging oceanic plates (Juan de Fuca and Pacific Plates) and continental plate (North American Plate). CSZ earthquakes occur due to rupture between the subducting oceanic plate and the overlying continental plates. The CSZ can produce earthquakes up to magnitude 9.3, and the recurrence interval is thought to be on the order of about 500 years. The most recent subduction zone earthquake was estimated to occur about 300 years ago.

Deep intraslab earthquakes, which occur from tensional rupture of the sinking oceanic plate, are also associated with the CSZ. An example of this type of seismicity is the 2001 Nisqually earthquake. Deep intraslab earthquakes typically are magnitude 7.5 or less and occur approximately every 10 to 30 years.

3.1 Seismic Design Parameters

Seismic design for the Project will be for a “Maximum Considered Earthquake” (MCE) with an earthquake ground motion that has 2 percent probability of exceedance in 50 years, or a return period of approximately 2,500 years. The effects of Site-specific subsurface conditions on the earthquake ground motion at the ground surface are determined based on the “Site Class.” The Site Class can be correlated to the average standard penetration resistance (N-value) or average shear wave velocity in the upper 100 feet of the soil profile. Based on the subsurface explorations completed at the Site, the soil profile below each building would classify as Site Class D (Stiff Soil Profile).

We understand the buildings will be permitted after the adoption of the 2018 International Building Code (IBC) and the American Society of Civil Engineers (ASCE) 7-16, *Minimum Design Loads for Buildings and Other Structures* (ASCE, 2017). The seismic design parameters, in accordance with the 2018 IBC and ASCE 7-16, and adjusted for Site Class D, are provided in Table 1.

Table 1. Seismic Design Parameters

Ground Motion Parameter	Recommended Value
Site Class	D– “Stiff Soil”
Short Period Spectral Acceleration, S_s (g)	1.311
1-Second Period Spectral Acceleration, S_1 (g)	0.453
Site Coefficient (F_a)	1.0
Site Coefficient (F_v)	1.847
Design Short Period Spectral Acceleration, S_{DS} (g)	0.874
Design 1-Second Period Spectral Acceleration, S_{D1} (g)	0.558
Site-Adjusted Peak Ground Acceleration (g)	0.616

Note: Parameters based on the latitude and longitude of the Site: 47.537973°N, 122.037268°W

3.2 Liquefaction Susceptibility

Liquefaction occurs when loose, saturated, and relatively cohesionless soil deposits temporarily lose strength and stiffness as a result of earthquake shaking. Potential effects of soil liquefaction include temporary loss of shallow-foundation bearing capacity, loss of deep-foundation axial and lateral capacity, vertical ground settlement, creekbank slope failure, and lateral ground movement towards creek banks or shoreline areas—any of which could result in structural damage. Primary factors controlling the triggering of liquefaction include intensity and duration of strong ground motion, characteristics of subsurface soils, *in situ* stress conditions, and the depth to groundwater.

Our explorations reveal that below the groundwater table, soils have sufficient relative density or plasticity/cohesiveness to render them nonsusceptible to liquefaction. Therefore, we conclude that liquefaction is not a design consideration at the Site.

3.3 Surficial Ground Rupture

Due to the suspected long recurrence interval, and the distance of the Site from the nearest known strand of the SFZ, and the great distance of the site from the CSZ, the potential for surficial ground rupture at the Site is considered low during the expected life of the structure.

4 Geotechnical Engineering Conclusions and Recommendations

4.1 Shallow Foundations on Fill

4.1.1 *Allowable Bearing Pressure*

In our opinion, shallow spread footings are feasible for the new building. Shallow foundations bearing directly on fill soils may be designed for an allowable bearing pressure of 3 kips per square foot (ksf). This allowable bearing pressure assumes the foundations are embedded a minimum of 24 inches below the ground surface and a minimum square footing dimension of 3 feet or a strip footing width of 2.5 feet. The allowable bearing pressure may be increased by one-third for short-duration loading, such as wind and seismic loading.

4.1.2 *Settlement*

We estimate footings bearing on the fill and designed in accordance with our recommendations will experience average total settlements of 1 inch or less. Differential settlements between adjacent column footings can be assumed to be about one-half of the total settlement. Differential settlement along continuous strip footings can be assumed to be approximately 0.5 inches per 25 feet of footing length. Total and differential settlement will occur rapidly as building loads are applied.

4.1.3 *Lateral Resistance*

To resist lateral loading, we recommend using an allowable passive equivalent fluid density of 300 pounds per cubic foot and an allowable base friction coefficient of 0.33 for foundations embedded in the fill. These allowable values include a factor of safety of 1.5.

4.2 Slabs-on-Grade

Concrete slabs-on-grade for the car wash building should be designed in accordance with the American Concrete Institute (ACI) Committee 360 Guide to Design of Slabs-on-Ground (ACI, 2010). We recommend the slab be underlain with 6 inches of free-draining, crushed rock or well-graded sand and gravel to provide a uniform support. The crushed rock material should have a maximum particle size of 3/4 inch, with no more than 80 percent passing the No. 4 sieve and less than 5 percent fines (material passing the U.S. Standard No. 200 sieve).

For slabs that are designed as beam-on-elastic foundation, a modulus of subgrade reaction of 200 pounds per cubic inch (pci) may be assumed for design.

4.3 Construction Dewatering

We do not expect the excavations for the shallow foundations to encounter groundwater. If small amounts of groundwater are encountered during construction, we expect it can be managed using sumps and pumps at the discretion of the contractor.

4.4 Pavement Design and Construction Considerations

We anticipate new access driveway areas and passenger vehicle parking areas will be paved with flexible hot mix asphalt (HMA). In asphalt driveway or parking areas where heavy trucks are anticipated to operate, we recommended the pavement section consist of 3 inches of HMA over 6 inches of crushed surfacing base and top course.

We recommend Crushed Surfacing Base Course (CSBC) for the pavement base course, and Crushed Surfacing Top Course (CSTC) may be used over the CSBC for the upper 2 to 3 inches of the base course section. CSBC and CSTC, as specified in Section 9-03.9(3) of the *Standard Specifications* (WSDOT, 2019), should be used as base course for pavements.

4.5 Stormwater Infiltration

The City of Issaquah utilizes the Washington State Department of Ecology Water Quality Program *Stormwater Management Manual for Western Washington* (SWMMWW; Ecology, 2014). The SWMMWW states that utilizing infiltrating BMPs is infeasible for properties within 100 feet of an area known to have deep soil contamination. Due to the presence of environmentally impacted soil and groundwater beneath the Site, we consider shallow stormwater infiltration to be inadvisable. We recommend stormwater management be accomplished utilizing storm drainpipes that discharge into an appropriate system which will not infiltrate into the groundwater.

5 Earthwork Considerations and Recommendations

Excavation for the Project will occur mostly in dense sand and gravel fill. We anticipate excavation can take place with standard excavation equipment, such as tracked excavators.

5.1 Temporary Excavation Slopes

Temporary excavation slopes will be required for installation of spread footings and utilities. Temporary excavation and slopes should not exceed the limits specified in the local, state, and federal regulations. The stability of temporary excavations and slopes shall be the responsibility of the contractor. The fill deposits are classified as Type C soil in accordance with the Washington Administrative Code (WAC) 296-155 Part N (WAC, 2016). Temporary excavation slopes in Type C soils are anticipated to stand as steep as 1.5H:1V (Horizontal:Vertical). If unexpected seepage is encountered, the temporary excavation slopes may be required to be flattened to remain stable.

We also recommend the following:

- Surface water should be diverted away from slopes.
- Protect slopes using plastic sheet, flash coating, or tarps to control erosion and stability, as necessary.
- Limit the duration that excavations or slopes are open to the shortest time possible.
- Traffic, equipment, and material stockpiles should not be allowed near the top of excavations or slopes.
- The conditions of the excavations and slopes should be periodically observed by a competent person, who is a representative of the contractor, to evaluate safety and stability.

5.2 Subgrade Preparation

5.2.1 *Shallow Foundations*

Foundation subgrades should be firm and unyielding and clear of all construction debris, loose or disturbed soil, and standing water prior to foundation construction. Soft or disturbed foundation subgrade areas, such as organic material, should be removed and replaced with structural fill. If organic material is encountered, it should be overexcavated until the competent fill is exposed and replaced with structural fill to reach the desired grade. Foundation preparation should be observed by Aspect prior to placing steel and pouring concrete to verify they have been prepared in conformance with our recommendations.

5.2.2 **Slabs-on-Grade and Pavements**

Slab-on-grade subgrade preparation should be observed and evaluated by a representative of Aspect prior to placement of the concrete or pavement section. All subgrade should be firm and unyielding under the proof-rolling load of heavy rubber-tired equipment where accessible and should be clear of any loose or disturbed soil or standing water. Disturbed or soft subgrade areas identified during evaluation should be removed and replaced with structural fill.

5.2.3 **Pavement**

The near-surface fill will provide suitable support for new pavement sections provided that any zones of concentrated organics and deleterious debris are removed from the pavement subgrade. All pavement subgrades should be carefully prepared. Prior to placing base course and pavement, all standard pavement subgrades should be proof-rolled with a fully loaded 10-cubic-yard dump truck or equivalent. An Aspect geotechnical engineer or engineering geologist should observe and evaluate the proof rolling operation. Any soft areas detected by the proof-rolling or other methods should be compacted in place or overexcavated to firm ground and backfilled with compacted structural fill to the design subgrade elevation. To provide for quality construction practices and materials, we recommend all pavement work and mix-design considerations conform to WSDOT standards.

The recommended pavement section is not intended to support extensive construction traffic, such as dump trucks and concrete Redi-mix trucks. Pavements subject to heavy construction traffic may be damaged and require repair.

Drainage is an essential aspect of pavement performance. We recommend providing all paved areas with positive drainage to remove surface water and water within the base course. This will be particularly important in cut sections or at low points within the paved areas, such as at catch basins.

5.3 **Structural Fill**

Soils placed beneath or around foundations, walls, utilities, slabs-on-grade, or below pavements should be considered structural fill. For these fill areas, we provide the following recommendations:

- Site-derived fill soils are suitable for reuse as structural fill but may be difficult to compact during wet weather. Additional fill can be imported per the recommendations below. Organic material or any soils with deleterious matter cannot be reused as structural fill.
- Structural fill to be used below foundations (for removal and replacement scenarios) can consist of appropriate on-Site material or crushed rock meeting the requirements for WSDOT Standard Specification Crushed Surfacing 9-03.9(3) (WSDOT, 2018).
- Structural fill should only be placed on a relatively firm and unyielding subgrade. The exposed subgrade soils should be compacted (in place) to a dense and unyielding condition prior to placement of structural fill.

- Structural fill should be compacted to a relatively firm and unyielding condition to a minimum density of 95 percent of the maximum dry density as determined by ASTM International (ASTM) D1557 (ASTM, 2018).
- Structural fill should be placed in lifts with a loose thickness no greater than 12 inches when using relatively large compaction equipment, such as a vibrating plate attached to an excavator (hoe pack) or drum roller. If small, hand-operated compaction equipment is used to compact structural fill, lifts should not exceed 6 inches in loose thickness.
- Moisture content of the structural fill should be controlled to within 2 to 3 percent of the optimum moisture. Optimum moisture is the moisture content corresponding to the maximum modified proctor dry density.
- Fill placed in softscape, general grading, landscape, or common areas that are not beneath or around structures, utilities, slabs-on-grade, or below paved areas that can accommodate some settlement should be compacted to a relatively firm and unyielding condition.

5.4 Utility Bedding and Backfill

General recommendations for bedding of utilities and backfill of utility trenches include:

- Materials to be used for utility bedding should consist of appropriate onsite material, meet the requirements WSDOT Standard Specification 9-03.9(3), or be as specified in the Standard Specification section applicable to the type of pipe being installed.
- Prior to installation of the pipe, the bedding material should be shaped to fit the lower portion of the pipe exterior with reasonable closeness to provide continuous support along the pipe.
- Bedding placed around the pipe should be placed in layers and tamped around the pipe to obtain complete contact. Pipe bedding material should be used as trench backfill to at least 6 inches above the crown of the pipe, for the full width of the trench. In areas where a trench box is used, the bedding material should be placed before the trench box is advanced.
- Trench backfill should meet the requirements for Structural Fill as described in Section 5.3 of this report. During placement of the initial lifts, the trench backfill material should not be bulldozed into the trench or dropped directly on the pipe. Furthermore, heavy vibratory equipment should not be permitted to operate over the pipe until at least 2 feet of backfill has been placed.

5.5 Temporary Erosion and Sedimentation Control

Temporary erosion-control measures should be implemented to prevent the migration of soil, dust, and turbid water off-Site or into stormwater systems. Such measures should include silt fences and straw wattles at the Site boundary, silt socks in nearby catch basins, wetting exposed soil during dry periods, and quarry spalls and wheel wash stations at truck and equipment exits.

5.6 Wet Weather Construction

Earthwork is typically most economical when performed under dry weather conditions. If earthwork is to be performed or fill is to be placed in wet weather or under wet conditions, we provide the following recommendations:

- Earthwork should be performed in small areas to minimize exposure to wet weather. The size and type of construction equipment used may have to be limited to prevent soil disturbance.
- Excavations for foundations, floor slabs, and pavements should be covered or protected (with concrete or WSDOT Standard Specification 9-03.9(3)) following approval of the subgrade by Aspect and should not be left open and exposed.
- Material used as structural fill should consist of clean, granular soil containing less than 7 percent fines.
- The ground surface within the construction area should be sealed by a smooth drum vibratory roller (or equivalent) and under no circumstances should be left uncompacted and exposed to moisture. Soils which become too wet for compaction should be removed and replaced with clean granular materials.
- Excavation and placement of fill should be observed by Aspect to verify that all unsuitable materials are removed, and suitable compaction is achieved.
- Local best management practices (BMPs) for erosion protection should be strictly followed.

6 Additional Design and Construction Monitoring

At the time of this report, concept Site plans, Site grading, structural plans, and construction methods have not been developed or finalized, and the recommendations presented herein are based on preliminary project information. If project developments result in changes to the assumptions made herein, we should be contacted to determine if our recommendations should be revised. We recommend that we have an opportunity to review and provide input on Site development plans as they are advanced to ensure that the recommendations of this report are appropriately incorporated into the Site design.

We are available to provide geotechnical engineering and monitoring services during construction. The integrity of the foundation depends on proper site preparation and construction procedures. In addition, engineering decisions may have to be made in the field in the event that variations in subsurface conditions become apparent.

7 References

- American Concrete Institute (ACI) Committee 360, 2010, Guide to Design of Slabs-on-Ground.
- American Society of Civil Engineers (ASCE), 2017, 7-16, Minimum Design Loads for Buildings and Other Structures.
- ASTM International (ASTM), 2018, 2018 Annual Book of ASTM Standards, West Conshohocken, Pennsylvania.
- Goldsmith Land Development Services (Goldsmith), 2017, ATLA/NSPS Land Title Survey for Lake Union Partners, Sheet 1 of 2 and 2 of 2, August 24, 2017.
- Washington State Department of Ecology Water Quality Program (Ecology), 2014, 2014 Stormwater Management Manual for Western Washington.
- Washington State Department of Natural Resources Division of Geology and Earth Resources (DNR), 2019, Washington Interactive Geologic Map, 2019, online at: <https://fortress.wa.gov/ndr/protectiongis/geology/?Theme=wigm>.
- Washington State Department of Transportation (WSDOT), 2019, Standard Specifications for Road, Bridge and Municipal Construction, Document M 41-10.
- Washington State Legislature, 2016, Washington Administrative Code (WAC), May 20, 2016.

8 Limitations

Work for this project was performed for Car Wash Enterprises, Inc. (Client), and this report was prepared consistent with recognized standards of professionals in the same locality and involving similar conditions, at the time the work was performed. No other warranty, expressed or implied, is made by Aspect Consulting, LLC (Aspect).

Recommendations presented herein are based on our interpretation of site conditions, geotechnical engineering calculations, and judgment in accordance with our mutually agreed-upon scope of work. Our recommendations are unique and specific to the project, site, and Client. Application of this report for any purpose other than the project should be done only after consultation with Aspect.

Variations may exist between the soil and groundwater conditions reported and those actually underlying the site. The nature and extent of such soil variations may change over time and may not be evident before construction begins. If any soil conditions are encountered at the site that are different from those described in this report, Aspect should be notified immediately to review the applicability of our recommendations.

It is the Client's responsibility to see that all parties to this project, including the designer, contractor, subcontractors, and agents, are made aware of this report in its entirety. At the time of this report, design plans and construction methods have not been finalized, and the recommendations presented herein are based on preliminary project information. If project developments result in changes from the preliminary project information, Aspect should be contacted to determine if our recommendations contained in this report should be revised and/or expanded upon.

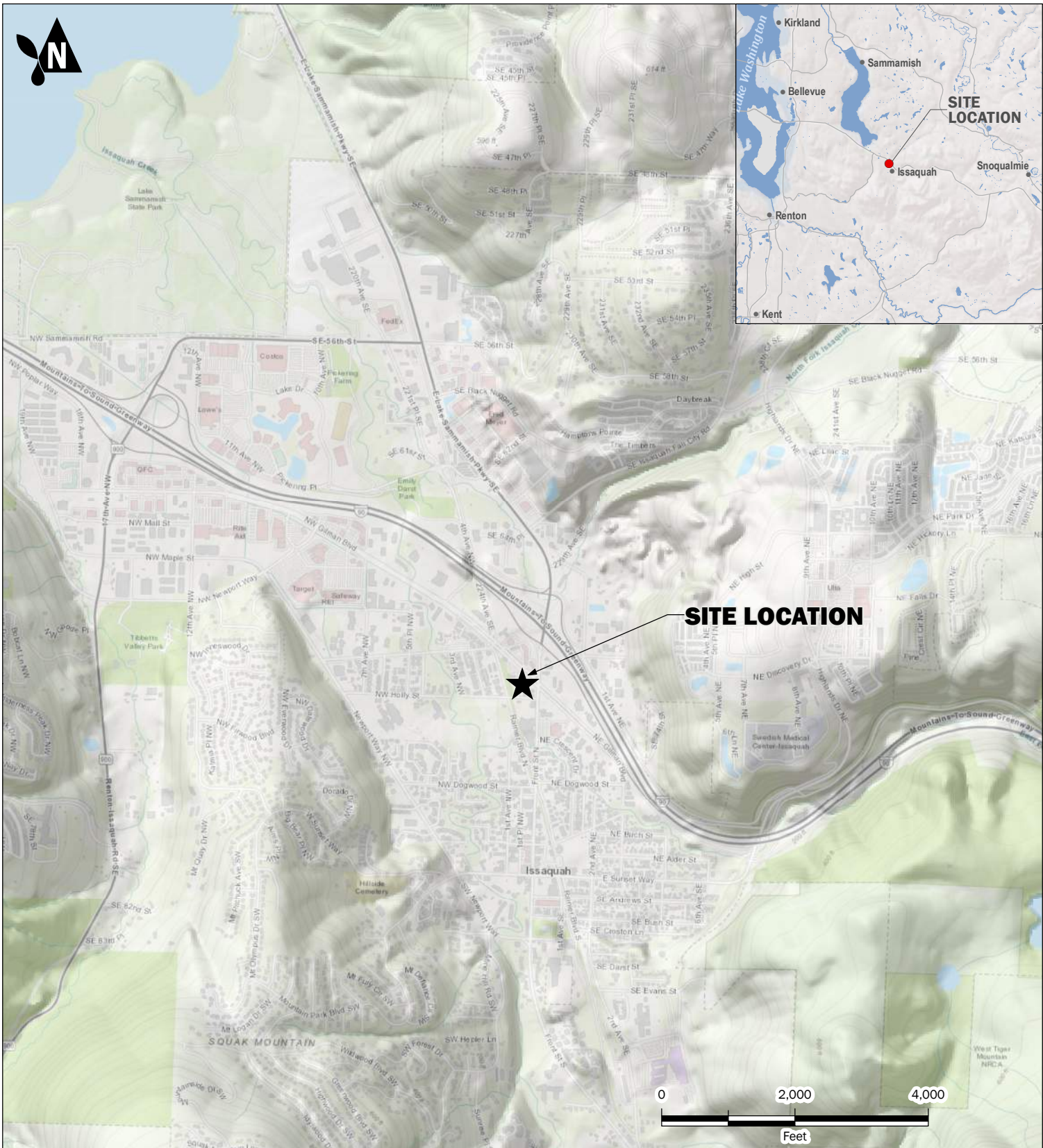
The scope of work does not include services related to construction safety precautions. Site safety is typically the responsibility of the contractor, and our recommendations are not intended to direct the contractor's site safety methods, techniques, sequences, or procedures. The scope of our work also does not include the assessment of environmental characteristics, particularly those involving potentially hazardous substances in soil or groundwater.

All reports prepared by Aspect for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect. Aspect's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix B titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.


We appreciate the opportunity to perform these services. If you have any questions, please call Rory Kilkenny PE, Geotechnical Engineer, at 541.256.0037.

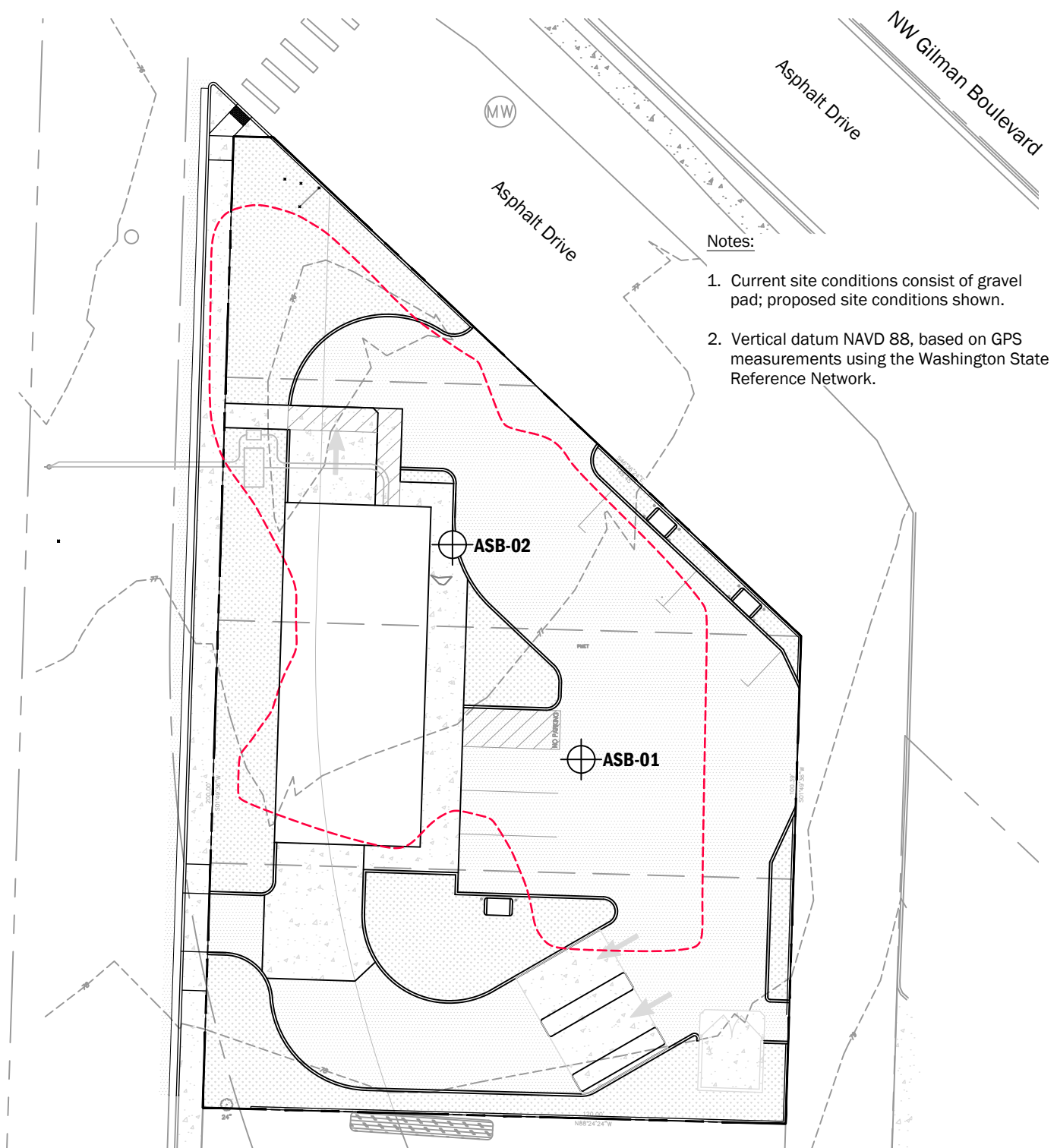
FIGURES



Site Location Map

Geotechnical Engineering Report
Car Wash Enterprises
55 NW Gilman Boulevard
Issaquah, Washington

	NOV-2019	BY: RPK / WEG	FIGURE NO. 1
	PROJECT NO. 080190	REVISED BY: ---	



DRAFT

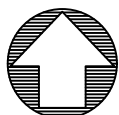
Legend



Boring Location



2019 Remedial
Excavation Boundary



0 30 60 Feet

Source: Base map provided by Barghausen Consulting Engineers, Inc., dated November 5, 2019.

Geotechnical Exploration Plan

Car Wash Enterprises
55 NW Gilman Boulevard
Issaquah, Washington



Nov-2019

PROJECT NO.
080109

BY:
RK/CMV

REVISED BY:
-

FIGURE NO.

2

APPENDIX A

Subsurface Explorations

A.1 Field Exploration Program

A.1.1 Hollow-Stem Auger Borings

On October 18, 2019, Aspect Consulting, LLC (Aspect) completed two machine-drilled borings (designated ASB-01 and ASB-02) at the Site. The machine-drilled borings were advanced with hollow-stem auger drilling methods using a CME 75 truck-mounted drill rig operated by Cascade Drilling under subcontract to Aspect.

In the machine-drilled borings, disturbed soil samples were obtained at 2.5- and 5-foot intervals by driving a 2-inch split-barrel sampler (SPT sampler) 18 inches into the soil with a 140-pound hammer free-falling a distance of 30 inches. The number of blows required to drive the sampler 18 inches is recorded in three 6-inch intervals. The number of blows required to drive the sampler the last two intervals is known as the blow count. The blow count provides a measure of relative density or consistency of granular and cohesive soils, respectively.

An Aspect geotechnical engineer was present throughout the exploration program to observe the drilling procedures, assist in sampling, and to prepare descriptive logs of the explorations. Soils were identified in general accordance with ASTM International (ASTM) D2488, *Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)* (ASTM, 2018). The summary exploration logs represent our interpretation of the contents of the field logs. The stratigraphic contacts shown on the individual summary logs represent the approximate boundaries between soil types; actual transitions may be more gradual. The subsurface conditions depicted are only for the specific date and locations reported; therefore, are not necessarily representative of other locations and times.

Upon completion, the machine-drilled borings were backfilled with 3/8-inch bentonite chips in accordance with requirements of the Washington State Department of Ecology.

Coarse-Grained Soils - More than 50% ¹ Retained on No. 200 Sieve	G Gravels - More than 50% ¹ of Coarse Fraction Retained on No. 4 Sieve	≤5% Fines	GW	Well-graded GRAVEL Well-graded GRAVEL WITH SAND
				GP Poorly-graded GRAVEL Poorly-graded GRAVEL WITH SAND
	S Sands - 50% ¹ or More of Coarse Fraction Passes No. 4 Sieve	≥15% Fines	GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
				GC CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
	S Sands - 50% ¹ or More of Coarse Fraction Passes No. 4 Sieve	≤5% Fines	SW	Well-graded SAND Well-graded SAND WITH GRAVEL
				SP Poorly-graded SAND Poorly-graded SAND WITH GRAVEL
	S Sands - 50% ¹ or More of Coarse Fraction Passes No. 4 Sieve	≥15% Fines	SM	SILTY SAND SILTY SAND WITH GRAVEL
				SC CLAYEY SAND CLAYEY SAND WITH GRAVEL
Fine-Grained Soils - 50% ¹ or More Passes No. 200 Sieve	S Silts and Clays Liquid Limit Less than 50%		ML	SILT SANDY or GRAVELLY SILT SILT WITH SAND SILT WITH GRAVEL
				CL LEAN CLAY SANDY or GRAVELLY LEAN CLAY LEAN CLAY WITH SAND LEAN CLAY WITH GRAVEL
	S Silts and Clays Liquid Limit 50% or More		OL	ORGANIC SILT SANDY or GRAVELLY ORGANIC SILT ORGANIC SILT WITH SAND ORGANIC SILT WITH GRAVEL
				MH ELASTIC SILT SANDY or GRAVELLY ELASTIC SILT ELASTIC SILT WITH SAND ELASTIC SILT WITH GRAVEL
	S Silts and Clays Liquid Limit 50% or More		CH	FAT CLAY SANDY or GRAVELLY FAT CLAY FAT CLAY WITH SAND FAT CLAY WITH GRAVEL
				OH ORGANIC CLAY SANDY or GRAVELLY ORGANIC CLAY ORGANIC CLAY WITH SAND ORGANIC CLAY WITH GRAVEL
Highly Organic Soils			PT	PEAT and other mostly organic soils

"WITH SILT" or "WITH CLAY" means 5 to 15% silt and clay, denoted by a "-" in the group name; e.g., SP-SM • "SILTY" or "CLAYEY" means >15% silt and clay • "WITH SAND" or "WITH GRAVEL" means 15 to 30% sand and gravel. • "SANDY" or "GRAVELLY" means >30% sand and gravel. • "Well-graded" means approximately equal amounts of fine to coarse grain sizes • "Poorly graded" means unequal amounts of grain sizes • Group names separated by "/" means soil contains layers of the two soil types; e.g., SM/ML.

Soils were described and identified in the field in general accordance with the methods described in ASTM D2488. Where indicated in the log, soils were classified using ASTM D2487 or other laboratory tests as appropriate. Refer to the report accompanying these exploration logs for details.

1. Estimated or measured percentage by dry weight
2. (SPT) Standard Penetration Test (ASTM D1586)
3. Determined by SPT, DCPT (ASTM STP399) or other field methods. See report text for details.

GEOTECHNICAL LAB TESTS	
MC	= Natural Moisture Content
GS	= Grain Size Distribution
FC	= Fines Content (% < 0.075 mm)
GH	= Hydrometer Test
AL	= Atterberg Limits
C	= Consolidation Test
Str	= Strength Test
OC	= Organic Content (% Loss by Ignition)
Comp	= Proctor Test
K	= Hydraulic Conductivity Test
SG	= Specific Gravity Test

CHEMICAL LAB TESTS	
Organic Chemicals	
BTEX	= Benzene, Toluene, Ethylbenzene, Xylenes
TPH-Dx	= Diesel and Oil-Range Petroleum Hydrocarbons
TPH-G	= Gasoline-Range Petroleum Hydrocarbons
VOCs	= Volatile Organic Compounds
SVOCs	= Semi-Volatile Organic Compounds
PAHs	= Polycyclic Aromatic Hydrocarbon Compounds
PCBs	= Polychlorinated Biphenyls

Metals	
RCRA8	= As, Ba, Cd, Cr, Pb, Hg, Se, Ag, (d = dissolved, t = total)
MTCA5	= As, Cd, Cr, Hg, Pb (d = dissolved, t = total)
PP-13	= Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn (d=dissolved, t=total)

FIELD TESTS	
PID	= Photoionization Detector
Sheen	= Oil Sheen Test
SPT ²	= Standard Penetration Test
NSPT	= Non-Standard Penetration Test
DCPT	= Dynamic Cone Penetration Test

Descriptive Term	Size Range and Sieve Number	COMPONENT DEFINITIONS
Boulders	= Larger than 12 inches	
Cobbles	= 3 inches to 12 inches	
Coarse Gravel	= 3 inches to 3/4 inches	
Fine Gravel	= 3/4 inches to No. 4 (4.75 mm)	
Coarse Sand	= No. 4 (4.75 mm) to No. 10 (2.00 mm)	
Medium Sand	= No. 10 (2.00 mm) to No. 40 (0.425 mm)	
Fine Sand	= No. 40 (0.425 mm) to No. 200 (0.075 mm)	
Silt and Clay	= Smaller than No. 200 (0.075 mm)	

% by Weight	Modifier	% by Weight	Modifier	ESTIMATED ¹ PERCENTAGE
<1	= Subtrace	15 to 25	= Little	
1 to <5	= Trace	30 to 45	= Some	
5 to 10	= Few	>50	= Mostly	

MOISTURE CONTENT	
Dry	= Absence of moisture, dusty, dry to the touch
Slightly Moist	= Perceptible moisture
Moist	= Damp but no visible water
Very Moist	= Water visible but not free draining
Wet	= Visible free water, usually from below water table

RELATIVE DENSITY	
Non-Cohesive or Coarse-Grained Soils	
Density³	SPT² Blows/Foot
Very Loose	= 0 to 4
Loose	= 5 to 10
Medium Dense	= 11 to 30
Dense	= 31 to 50
Very Dense	= > 50

CONSISTENCY	
Cohesive or Fine-Grained Soils	
Consistency³	SPT² Blows/Foot
Very Soft	= 0 to 1
Soft	= 2 to 4
Medium Stiff	= 5 to 8
Stiff	= 9 to 15
Very Stiff	= 16 to 30
Hard	= > 30

GEOLOGIC CONTACTS	
Observed and Distinct	Observed and Gradual
Inferred	

Aspect CONSULTING	Exploration Log Key
-------------------	---------------------



Brown Bear - Issaquah - 080109

Project Address & Site Specific Location
55 NW Gilman Blvd Issaquah, WA 98027, W of Chevron Station, SE of ASB-02

Geotechnical Exploration Log

Coordinates (Lat, Lon WGS84)

47.53796, -122.03722 (est)

Exploration Number

ASB-01

Contractor

Cascade

Equipment

CME 75 truck rig

Sampling Method

Autohammer; 140 lb hammer; 30" drop

Ground Surface (GS) Elev. (NAVD88)

77' (est)

Operator

James

Exploration Method(s)

Hollow stem auger

Work Start/Completion Dates

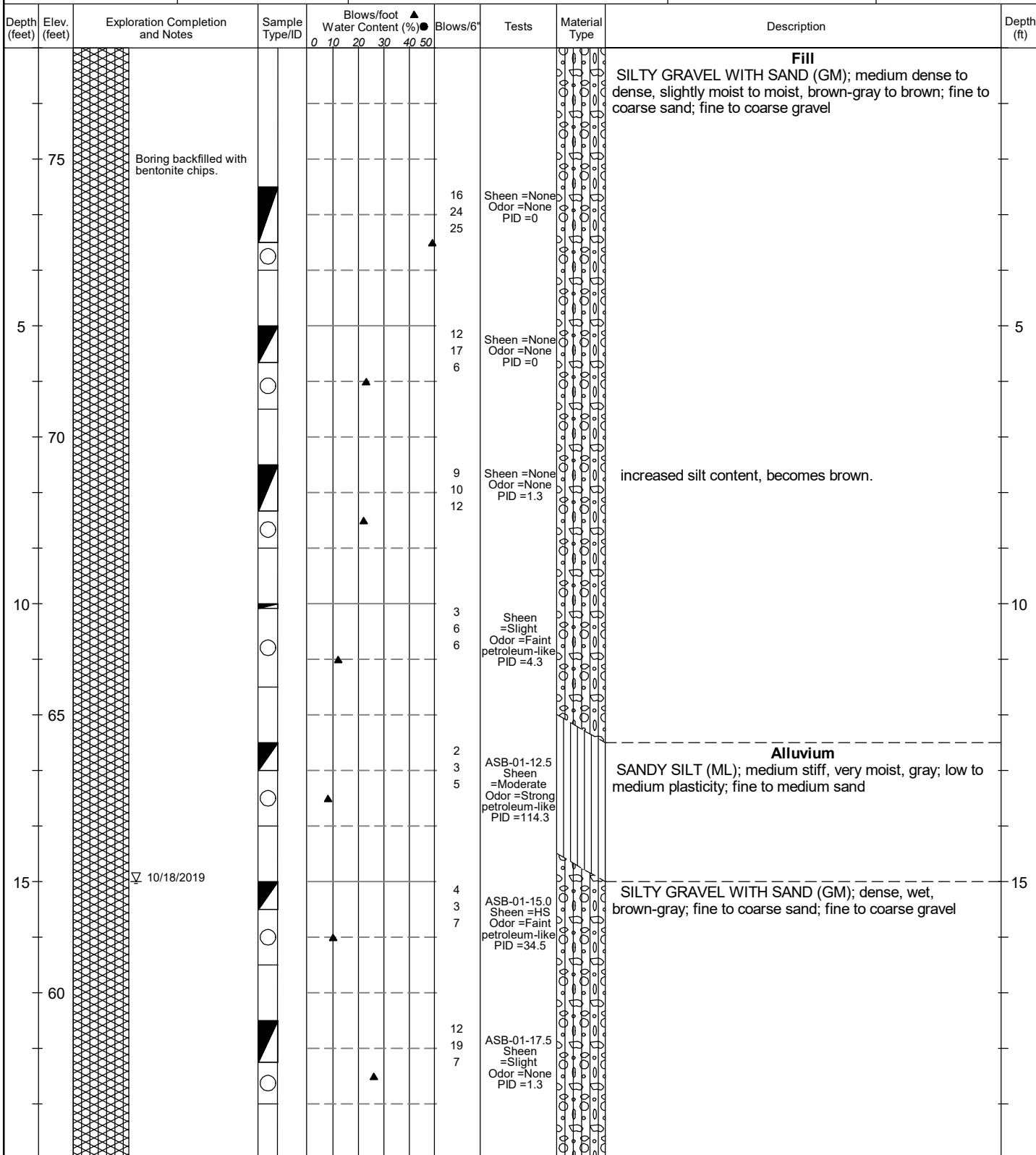
10/18/2019

Top of Casing Elev. (NAVD88)

NA

Depth to Water (Below GS)

15' (ATD)



Legend

- ☐ No Soil Sample Recovery
- ☒ Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

▽ Water Level ATD

Water Level

See Exploration Log Key for explanation of symbols

Logged by: IVT
Approved by: RPK

Exploration Log
ASB-01

Sheet 1 of 2



Brown Bear - Issaquah - 080109

Project Address & Site Specific Location
55 NW Gilman Blvd Issaquah, WA 98027, W of Chevron Station, NW of ASB-01

Geotechnical Exploration Log

Coordinates (Lat, Lon WGS84)

47.53808, -122.03733 (est)

Exploration Number

ASB-02

Contractor

Cascade

Operator

James

Equipment

CME 75 truck rig

Exploration Method(s)

Hollow stem auger

Sampling Method

Autohammer; 140 lb hammer; 30" drop

Work Start/Completion Dates

10/18/2019

Ground Surface (GS) Elev. (NAVD88)

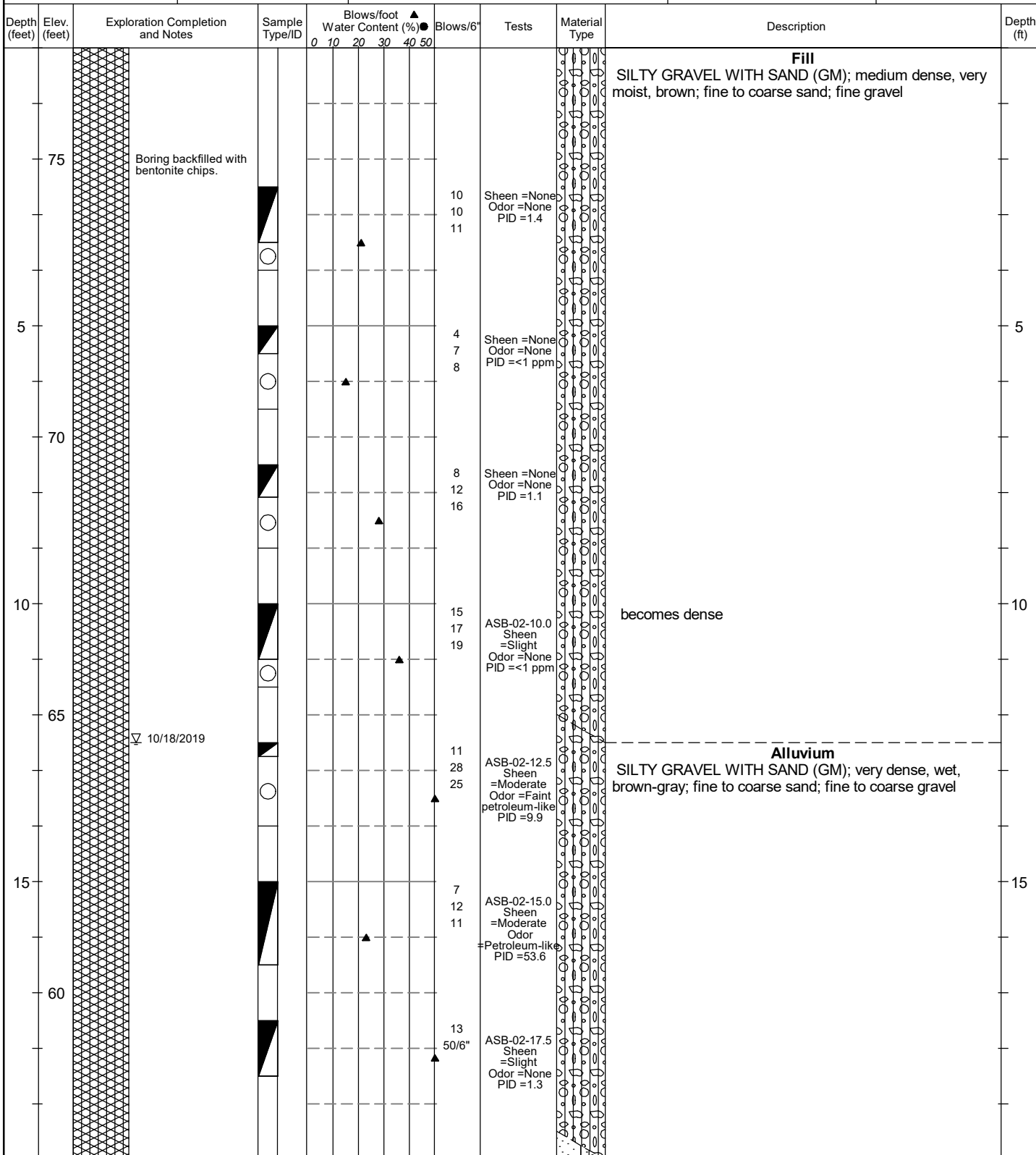
77' (est)

Top of Casing Elev. (NAVD88)

NA

Depth to Water (Below GS)

12.5' (ATD)



Legend

□ No Soil Sample Recovery

■ Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

▽ Water Level ATD

Water Level

See Exploration Log Key for explanation of symbols

Logged by: IVT
Approved by: RPK

Exploration Log
ASB-02

Sheet 1 of 2

**Brown Bear - Issaquah - 080109**

Project Address & Site Specific Location
55 NW Gilman Blvd Issaquah, WA 98027, W of Chevron Station, NW of ASB-01

Geotechnical Exploration Log

Coordinates (Lat, Lon WGS84)

47.53808, -122.03733 (est)

Exploration Number

ASB-02

Contractor

Cascade

Equipment

CME 75 truck rig

Sampling Method

Autohammer; 140 lb hammer; 30" drop

Ground Surface (GS) Elev. (NAVD88)

77' (est)

Operator

James

Exploration Method(s)

Hollow stem auger

Work Start/Completion Dates

10/18/2019

Top of Casing Elev. (NAVD88)

NA

Depth to Water (Below GS)

12.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot	Water Content (%)	Blows/6'	Tests	Material Type	Description	Depth (ft)
				0 10 20 30 40 50						
						50/6"	ASB-02-20.0 Sheen = Slight Odor = None PID = <1 ppm		SAND WITH SILT (SP-SM); very dense, wet, brown-gray; fine to coarse sand SILTY GRAVEL WITH SAND (GM); very dense, wet, brown-gray; fine to coarse sand, fine to coarse gravel	
55						5/6"	ASB-02-22.5 Sheen = Slight Odor = None PID = <1 ppm		silt (ML) interbed (2" thick)	
25						10 25 30	ASB-02-25.0 Sheen = None Odor = None PID = 1.4		SILTY SAND (SM); very dense, wet, brown-gray; slow dilatancy; fine to coarse sand fine to coarse gravel layer (3" thick)	25
50						11 27 42	Sheen = None Odor = None PID = 2.7		SILTY SAND WITH GRAVEL (SM); very dense, very moist, brown-gray to light brown; fine to coarse sand; fine gravel	
30						32 50/6"	Sheen = None Odor = None PID = 1.2		increased silt content	30
45									Bottom of exploration at 31 ft. bgs. Note: Boring elevations not surveyed for this project.	
35										35
40										

Legend
☐ No Soil Sample Recovery

☒ Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

Water Level ATD

Water Level

See Exploration Log Key for explanation of symbols

 Logged by: IVT
Approved by: RPK

Exploration Log
ASB-02

Sheet 2 of 2

APPENDIX B

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND GUIDELINES FOR USE

This Report and Project-Specific Factors

Aspect Consulting, LLC (Aspect) considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual limitations. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with our Agreement with the Client and recognized geoscience practices in the same locality and involving similar conditions at the time this report was prepared

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope instability, or groundwater fluctuations. If any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques, and personnel used to perform a geotechnical or geologic study differ significantly from those used to perform an environmental study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions, or recommendations (e.g., about the likelihood of encountering underground storage tanks or regulated contaminants). Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

We appreciate the opportunity to perform these services. If you have any questions please contact the Aspect Project Manager for this project.

Tab 8.0

8.0 OTHER PERMITS

- City of Issaquah Building Permit
- City of Issaquah Grading Permit
- City of Issaquah Right-of-way Permit
- City of Issaquah Fire Permit
- City of Issaquah Sign Permit

Tab 9.0

9.0 OPERATIONS AND MAINTENANCE MANUAL

An Operations and Maintenance Manual will be provided in this section during Final Engineering Review.

Tab 10.0

10.0 DECLARATION OF COVENANT FOR PRIVATELY MAINTAINED FLOW CONTROL AND TREATMENT FACILITIES

A Declaration of Covenant for Maintenance and Inspection of Onsite Stormwater BMPs will be provided in this section during final engineering review.

Tab 11.0

11.0 DECLARATION OF COVENANT FOR PRIVATELY MAINTAINED ON-SITE STORMWATER MANAGEMENT BMPS

A Declaration of Covenant for Maintenance and Inspection of Onsite Stormwater BMPs will be provided in this section during final engineering review.

Tab 12.0

12.0 BOND QUANTITIES WORKSHEET

A completed Bond Quantities Worksheet will be provided in this section during Final Engineering Review.



March 20, 2020

Caitlin Hepworth, Assistant Planner
Barghausen Consulting Engineers, Inc.
18215 72nd Avenue South
Kent, WA 98032

Re: Remediation / Mitigation Status Report
Former Casey's Car Care Redevelopment
55 NW Gilman Boulevard
Issaquah, Washington 98027
Project No. 080109

Dear Ms. Hepworth:

Aspect Consulting, LLC (Aspect) has prepared this memo on behalf of Car Wash Enterprises, Inc. (CWE) to fulfill the City of Issaquah's requirement of a Mitigation Report that assesses the status of total petroleum hydrocarbon (TPH) contamination mitigation and cleanup at 55 NW Gilman Boulevard in Issaquah, Washington (the Site). This memo is intended to be used as an attachment for the City of Issaquah Land Use permit; it is for planning purposes only and not to be used as a stand-alone document. CWE is cleaning up the Site in conjunction with plans to redevelop the parcel as a car wash facility.

This memo outlines the environmental cleanup history as well as the remaining cleanup activities to be conducted in conjunction with redevelopment of the Site.

Gasoline Service Station History

The Site has a history of use both as a gasoline service station and car care facility. Gasoline-range TPH is the primary contaminant of concern, but there are also localized areas with heavier-range TPH (diesel/oil). Please see the "Phase 1 Environmental Site Assessment, Casey's Car Care" (Aspect, 2016a) and the "Subsurface Investigation Summary, Casey's Car Care" (Aspect, 2016b) for more information on the Site impacts pre-excavation.

Two-Phase Cleanup

Property redevelopment provides an opportunity to conduct a soil/groundwater cleanup. For this Site, cleanup will occur in two phases: (1) impacted soil excavation at the time pre-existing structures and underground storage tanks (USTs) are removed; and (2) *in-situ* remediation of remaining impacts in conjunction with car wash construction. Both phases of this cleanup are overseen by the Washington State Pollution Liability Insurance Agency (PLIA) under their technical assistance program to ensure compliance with the state environmental regulations (Model Toxics Control Act [MTCA], Chapter 173-340 Washington Administrative Code [WAC]).

Phase 1—Impacted Soil Excavation and UST Removal

Phase 1 of the cleanup was completed between August and October 2019. This phase of work included UST removal and excavation with off-site disposal of accessible impacted soil with

petroleum hydrocarbons above the MTCA Method A cleanup levels (CULs). Care was taken to excavate to safe and practicable limits in order to minimize the amount of contamination left in place. Excavation constraints consisted of water table depth and sidewall stability at the property boundaries. Please reference the “Contaminated Media Management Plan” (CMMP; Aspect, 2018) for Phase 1 cleanup methodology.

With excavation complete, the Site is currently at grade and gravel covered. The estimated depth and distribution of post-excavation TPH impacts to on-property soil are shown on Figure 1. Residual contamination remains in two general areas—below the water table (purple shading on Figure 1) and adjacent to the access road on the east/northeast side of the property (orange shading on Figure 1). Impacted soil below the water table occurs between the approximate depths of 13 to 20 feet below ground surface. Impacted soil left in place along the property line were closer than a 1.5H:1V (horizontal: vertical) slope from the property line. More information on excavation-related soil sampling and residual contamination can be found in Table 1 (final excavation bottom and sidewall samples are representative of post-excavation conditions) and Figure 2 (identifies all sample locations).

Phase 2—In Situ Treatment Coordinated with Car Wash Redevelopment

Phase 2 cleanup will use specific *in situ* technologies to treat TPH remaining in soil and groundwater following excavation. CWE will likely use air sparging/soil vapor extraction (AS/SVE) primarily to treat gasoline-range TPH and enhanced biotreatment injections for diesel/oil-range TPH. These technologies will be designed concurrently, and the designs will be included with the redevelopment plans. A supplemental soil investigation is planned for 2020 to better characterize and delineate residual contamination to be treated in Phase 2. The results of the supplemental investigation will inform the AS/SVE and enhanced bioremediation designs. The investigation work plan and the treatment designs will require review/approval by PLIA.

AS/SVE is an *in situ* remediation technology which removes light-range petroleum hydrocarbons by exchanging many pore volumes of air in the subsurface via an induced vacuum. This technology treats both soil and groundwater and works both above and below the water table. The addition of atmospheric oxygen into the subsurface also supports contaminant biodegradation, including heavier-range TPH (diesel/oil). Figure 3 shows possible locations for AS/SVE wells and an AS/SVE equipment enclosure overlaid on Aspect’s Estimated On-Property Extent of Residual Contamination; note that these locations are possible, not proposed. Air sparging well screens must be located within the residual contamination areas. Vertical wells cannot be installed in the location of the car wash building or the stormwater retention vault. However, angled drilling may be used to treat areas beneath those structures.

Enhanced aerobic bioremediation (EAB) is an *in situ* technology which utilizes engineered subsurface conditions to degrade petroleum hydrocarbons. EAB is the practice of adding oxygen (an electron acceptor) to groundwater and/or soil to increase the number and vitality of indigenous microorganisms already naturally performing biodegradation of TPH at the site. Application is typically accomplished via injection of a liquid or slurry compound to provide chemical oxygen to the subsurface. This process is performed in several discrete injection events. It does not require continuously-operating equipment onsite and is most effective in the saturated zone (below the

water table). EAB would be used to treat less-volatile (diesel/oil) TPH areas where AS/SVE is less effective, where AS/SVE trenching could not reach, and/or off property areas where permanent infrastructure cannot be installed. Like air sparging, the EAB oxygen addition must occur near the residual contamination in groundwater to be effective.

In situ treatment will occur primarily after redevelopment. An initial round of EAB treatment may be coordinated with redevelopment construction. The AS/SVE wells and trenching will be installed after redevelopment construction is completed (or nearly completed) to prevent damage during redevelopment construction. Monthly monitoring and AS/SVE system optimization is anticipated while active Phase 2 treatment is underway.

References

Aspect Consulting, LLC (Aspect), 2016a, Phase I Environmental Site Assessment, Casey's Car Care, April 29, 2016.

Aspect Consulting, LLC (Aspect), 2016b, Subsurface Investigation Summary, Casey's Car Care, June 13, 2016.

Aspect Consulting, LLC (Aspect), 2018, Contaminated Media Management Plan, 55 NW Gilman Blvd., Issaquah, Washington, prepared for Car Wash Enterprises, Inc., dated August 20, 2018.

Limitations

Work for this project was performed for Car Wash Enterprises, Inc. (Client), and this letter was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This letter does not represent a legal opinion. No other warranty, expressed or implied, is made.

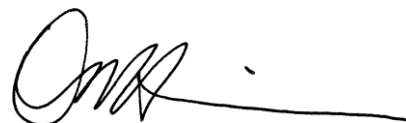
All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Sincerely,

Aspect consulting, LLC



Breeyn Greer, PE
Staff Engineer
bgreer@aspectconsulting.com



Doug Hillman, LHG
Principal Hydrogeologist
dhillman@aspectconsulting.com

Attachments: Table 1 – Soil Quality Data
Figure 1 – Estimated On-Property Extent of Residual Contaminated Soil
Figure 2 – Site Grid, Excavation Areas, and Sample Locations
Figure 3 – Proposed Civil Site Plan

V:\080109 Car Wash Enterprises\Deliverables\001-12 Gilman Blvd\Land Use Permit Attachments\Mitigation Study_03_2020\Mitigation Study_20200320.docx

TABLES

Table 1. Soil Quality Data

Project No. 080109-12H, Issaquah, Washington

Excavation Area	Grid Location	Sample ID	Sample Depth (feet)	Sample Date	Sample Type	TPH as Gasoline	TPH as Diesel	TPH as Heavy Oil	Benzene	Toluene	Ethyl-benzene	Total Xylenes
USTs 12 - 15	E2	12-NC-10	10	09/18/19	UW	15	<50	<250	<0.02	0.045	<0.02	0.095
	F2	12-BW-13	13	09/18/19	UB	10	<50	<250	<0.02	0.03	0.03	0.10
	F2	12-NW-8	8	09/18/19	UW	66	490 x	1,100	0.032	0.26	0.97	1.6
	F2	12-W-6	6	09/18/19	UW	110	1,300	<250	<0.02 j	<0.1	<0.1	0.38
	F2	13-BW-13	13	09/18/19	UB	<5	73	<250	<0.02	<0.02	<0.02	<0.06
	F2	13-W-9	9	09/18/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	F2	F2-SW-9	9	09/18/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	F3	12-BE-13	13	09/18/19	UB	9.7	<50	<250	<0.02	0.040	<0.02	0.093
	F3	12-E-7.5	7.5	09/18/19	UW	420	1,100	<250	<0.02 j	0.84	0.61	3.9
	F3	12-NE-9	9	09/18/19	UW	310	600	<250	<0.02 j	1.2	0.31	2.3
	F3	13-BE-13	13	09/18/19	UB	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	F3	13-E-8.5	8.5	09/18/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G2	14-B-14	14	09/18/19	UB	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G2	14-W-8	8	09/18/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G3	14-E-8	8	09/18/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H1	15-W-10	10	09/17/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H2	15-B-15	15	09/17/19	UB	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H2	15-SC-10	10	09/17/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H2	15-SW-11	11	09/17/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H3	15-E-10	10	09/17/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H3	15-SE-10	10	09/17/19	UW	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
Northern PCS	B1	B1-SW-10	10	09/09/19	FS	100	<50	<250	<0.02	0.35	0.071	0.63
	B2	B2-SW-10	10	09/09/19	FS	410	140 x	<250	<0.02 j	2.0	0.59	3.0
	C1	C1-SW-10	10	09/10/19	FS	19	<50	<250	<0.02	0.057	<0.02	0.11
	C2	C2-11	11	09/11/19	OE	900	160 x	<250	<0.2	7	4.4	21
	C2	C2-BTM-13	13	09/09/19	FB	2,500	640 x	<250	<0.2	32	22	37
	C3	C3-10	10	09/11/19	FS	1,000	260 x	<250	<0.2	3.5	0.62	2.6
	C3	NE-2.5	2.5	09/05/19	BD,OE	<5	na	na	<0.02	<0.02	<0.02	<0.06
	C4	C4-SW-12	12	09/11/19	FS	1,000	300 x	<250	<0.4	15	4.6	9.4
	D1	D1-SW-12	12	09/10/19	FS	9.3	<50	<250	<0.02	0.052	<0.02	0.094
	D2	D2-BTM-13	13	09/10/19	FB	240	370 x	<250	<0.02 j	1.8	1.6	1.9
	D2	NW-2.5	2.5	09/05/19	BD,OE	350	290 x	290	<0.02	1.7	0.68	1.9
	D2/E2	D2E2-12	12	09/11/19	FB	1,100	540 x	<250	<0.2	4.9	7.6	12
	D3	CE-2	2	09/05/19	BD,OE	<5	na	na	<0.02	<0.02	<0.02	<0.06
	D3	D3-BTM-14	14	09/11/19	FB	2,100	1,500 x	<250	<1	14	27	140
	D4	D4-BTM-13	13	09/25/19	FB	5,900	1,200 x	<250	<1	58	84	260
	D4	D4-Fill-12	12	09/25/19	FS	<5	84	<250	<0.02	<0.02	<0.02	<0.06
	D4	D4-SW-12	12	09/11/19	OE	320	130 x	<250	<0.2	0.35	0.62	2.6
	D4	SE-3	3	09/05/19	BD,OE	<5	na	na	<0.02	0.042	<0.02	<0.06
	D4/D5	D4D5-SW-11	11	09/25/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	E1	E1-SW-11	11	09/20/19	FS	36	330	<250	<0.02	0.043	0.023	0.18
	E2	CW-2.5	2.5	09/05/19	BD,OE	<5	na	na	<0.02	<0.02	<0.02	<0.06
	E2	E2-10	10	09/20/19	OE	230	230	<250	<0.02 j	0.97	0.38	2
	E2	E2-BTM-14	14	09/20/19	FB	130	86	<250	<0.02	0.46	0.085	0.67
	E2	E2-SW-12	12	09/20/19	FS	9.4	<50	<250	<0.02	0.029	<0.02	<0.06
	E3	E3-BTM-13	13	09/11/19	FB	83	92 x	<250	<0.02 j	0.32	<0.1	0.46
	E3	E3-SW-12	12	09/11/19	FS	16	<50	<250	<0.02	<0.02	<0.02	0.099
	E3	E3-SW-11.5	11.5	09/25/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	E3	SW-3	3	09/05/19	BD,OE	<5	na	na	<0.02	0.040	<0.02	<0.06
Southeastern PCS	F4	F4-10	10	09/30/19	FB	430	270 x	<250	<0.2	<0.2	0.24	2.4
	F4	F4-SWW-9	9	09/30/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	F5	F5-B-15	15	09/03/19	FB	5,700	2,500 x	580	<0.4	<0.4	2.9	21
	F5	F5-SW-11	11	09/30/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G3	G3-SWW-9	9	10/01/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G4	Drain-S-3.5	3.5	08/29/19	OE	11,000	4,700	920	<0.1	0.51	10	45
	G4	G4-BTM-11	11	09/30/19	FB	9	440 x	<250	<0.02	<0.02	<0.02	<0.06
	G4	G4-SW-8	8	08/30/19	OE	5,300	9,100	4,300	<0.1	0.84	10	44
	G4	G4-SWE-9	9	10/01/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G4	G4-SWS-9	9	09/30/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	G5	SW1-2-NA	8	08/29/19	OE	3,900	6,600	5,800	<0.1	0.45	<0.1	49
	H4	H4-B-14	14	08/30/19	FB	1,600	1,600	410	<0.2	<0.2	1.3	6.9
	H4	H4-SWS-8	8	09/30/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H4/I4	SW1-2-W	10	08/28/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	H5	BTM1-2-N	13	08/28/19	FB	1,400	670	<250	<0.02	<0.2	0.8	4.1
	H5	SW1-2-N	10	08/28/19	OE	2,000	na	na	<0.2	<0.2	2.1	9.7
	I5	BTM1-2-S	11.5	08/28/19	FB	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	I5	BTM1-2-WT	14	08/28/19	FB	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	I5	SW1-2-S	10	08/28/19	FS	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	I6	SW1-2-E	10	08/28/19	FS	240	8,600	<250	<0.2	<0.2	<0.2	<0.6
(Stockpiles)	--	SS1-1	--	08/28/19	St	<5	na	na	<0.02	<0.02	<0.02	<0.06
	--	SS1-2	--	08/28/19	St	<5	na	na	<0.02	<0.02	<0.02	<0.06
	--	SS1-3	--	08/28/19	St	<5	na	na	<0.02	<0.02	<0.02	<0.06
	--	SS2-1	--	09/18/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS2-2	--	09/18/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS2-3	--	09/18/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS3-1	--	09/25/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS3-2	--	09/25/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS3-3	--	09/25/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS3-4	--	09/25/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
	--	SS3-5	--	09/25/19	St	<5	<50	<250	<0.02	<0.02	<0.02	<0.06
MTCA Method A Cleanup Level						30 ⁽²⁾	2,000	2,000	0.03	7	6	9

BD

Shallow sample collected from beneath a former pump island dispenser

FB

Final excavation bottom sample

FS

Final excavation sidewall sample

j

Concentration is estimated

MTCA

Washington State Model Toxics Control Act

na

not analyzed

OE

Sample collected at a location that was subsequently overexcavated

PCS

Petroleum contaminated soil

St

Stockpile sample (for soil to be reused on site)

TPH

Total petroleum hydrocarbon

UB

UST pit bottom sample

UW

UST pit sidewall sample

x

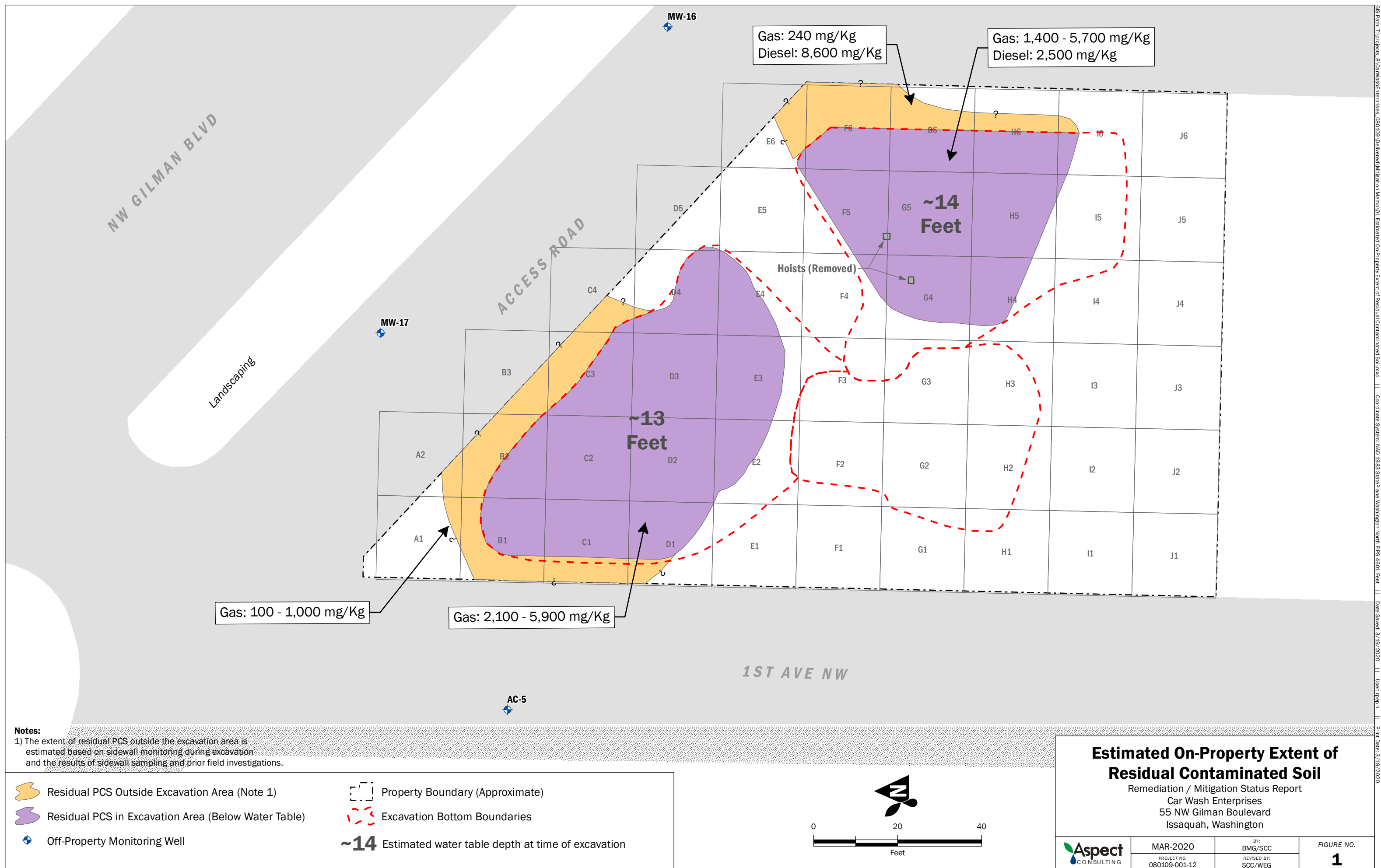
Chromatographic pattern does not resemble the fuel standard used for quantitation.

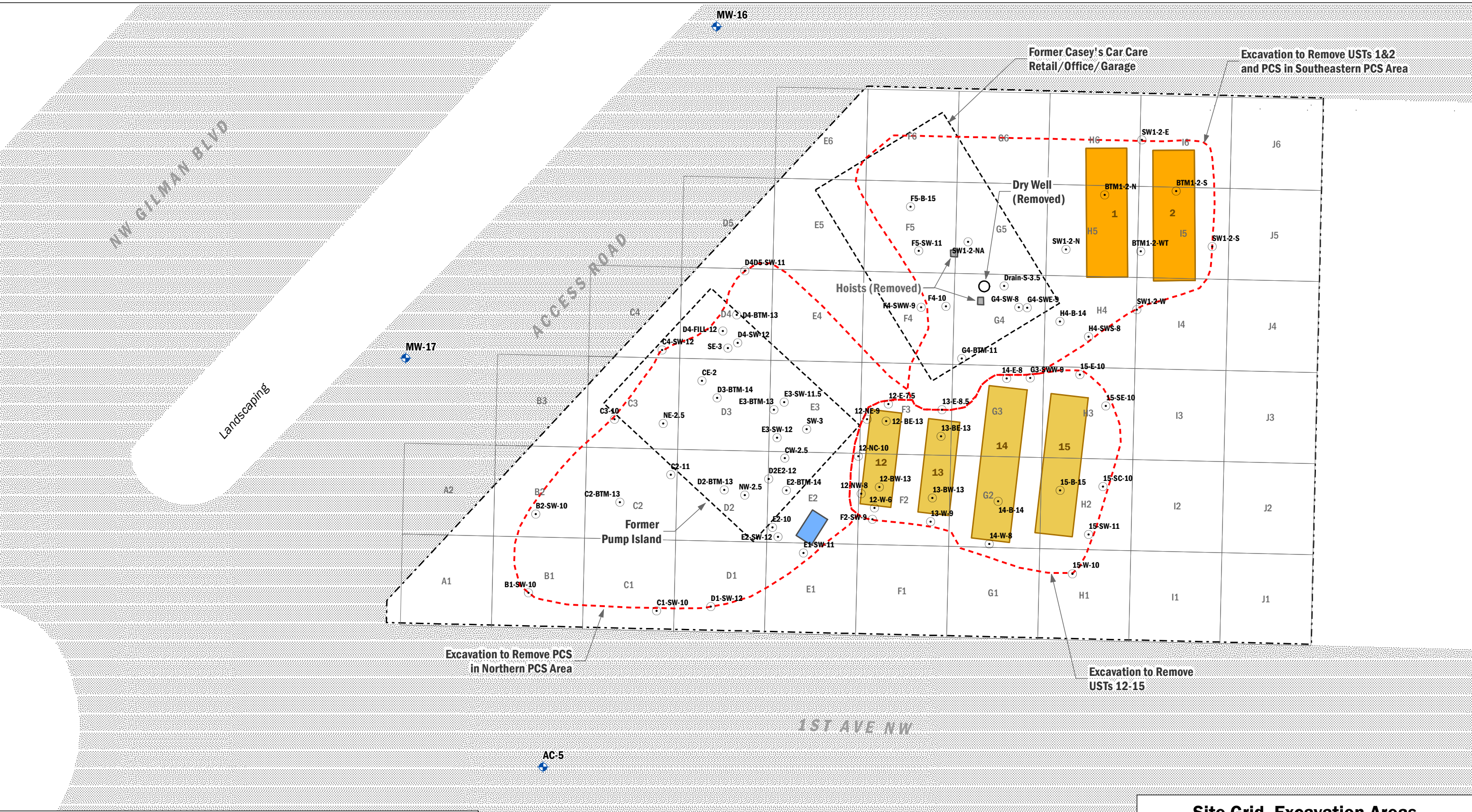
Notes:

1) All concentrations are in milligrams per kilogram (mg/kg). **Bold** values exceed MTCA Method A soil cleanup level for unrestricted land use. Gray-shading indicates sample location that was subsequently overexcavated.

2) The MTCA Method A cleanup level for gasoline-range TPH is 30 mg/kg when benzene is detected in soil.

FIGURES





Sample Location

Off-Property Monitoring Well

UST (Removed)

Closed-In-Place UST (Removed)

Oil-Water Separator (Removed)

Property Boundary (Approximate)

Excavation Bottom Boundaries

**Site Grid, Excavation Areas,
and Soil Sample Locations**

Mitigation Study
Car Wash Enterprises
55 NW Gilman Boulevard
Issaquah, Washington

ASPECT
CONSULTING

JAN-2020

PROJECT NO.
080109-001-12

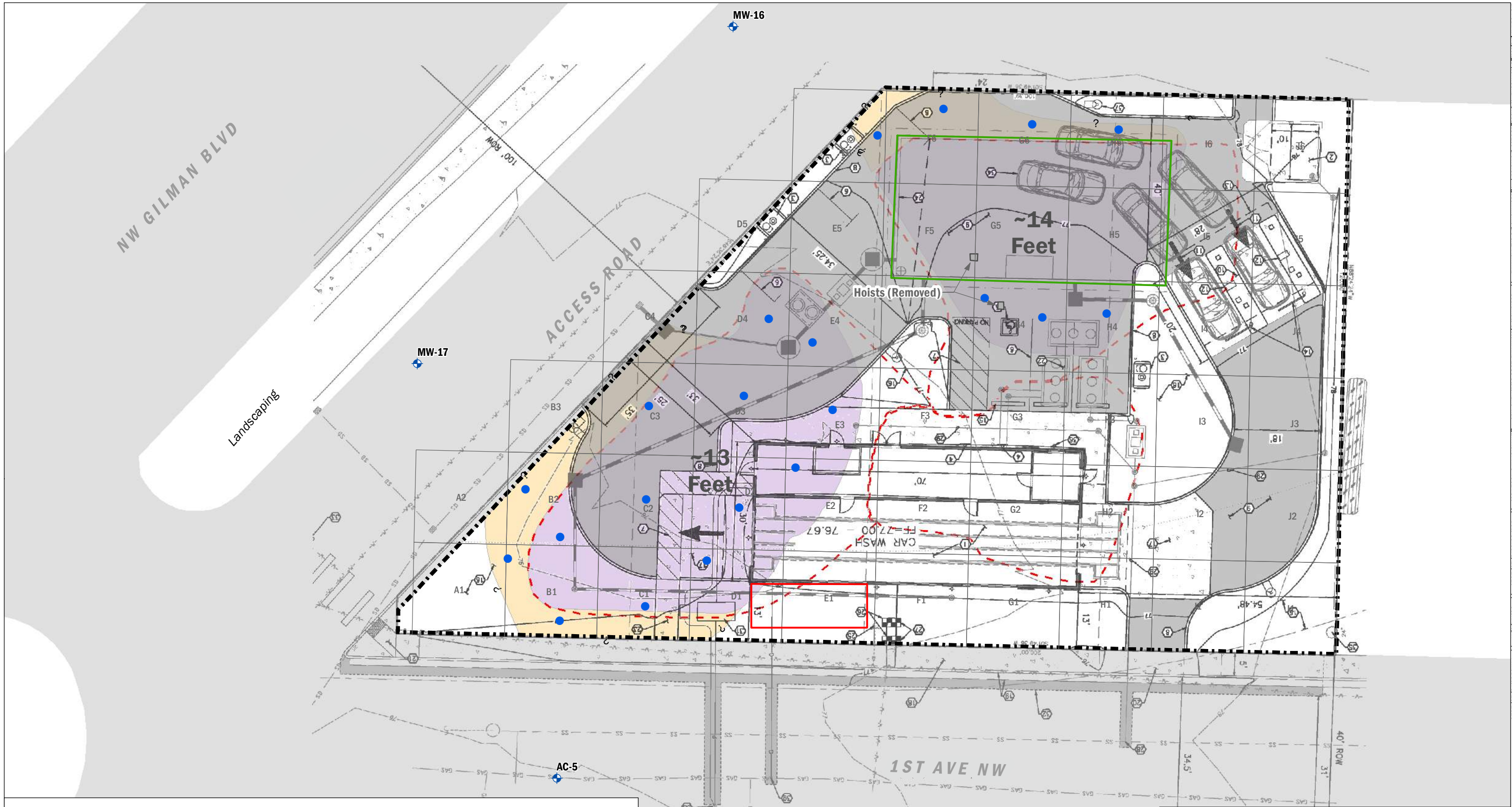
BY:
RAP/DAH/SCC

REVISED BY:
SCC

FIGURE NO.

2

GIS Part 1, Project 8, Car Wash Enterprises, 080109, Deliverable, Site Cleanup Report Site Grid Excavation Areas and Soil Sample Locations.mxd | Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet | Date Saved: 1/22/2020 | User: scd | Print Date: 1/22/2020



Residual PCS Outside Excavation Area (Note 1)

Residual PCS in Excavation Area (Below Water Table)

Off-Property Monitoring Well

Possible Location of AS/SVE Well

Property Boundary (Approximate)

Excavation Bottom Boundaries

Proposed Location of Storm Vault

Possible Location of AS/SVE Enclosure

~14 Estimated water table depth at time of excavation

Notes:

1) The extent of residual PCS outside the excavation area is estimated based on sidewall monitoring during excavation and the results of sidewall sampling and prior field investigations.

2) *Civil Site Plan from Barghausen overlaid on Aspect Estimated On Property Extent of Residual Contamination Map.

3) 14 foot estimated water table depth at time of excavation and bottom depth of soil removal excavation.

Proposed Civil Site Plan*

Remediation / Mitigation Status Report
Car Wash Enterprises
55 NW Gilman Boulevard
Issaquah, Washington

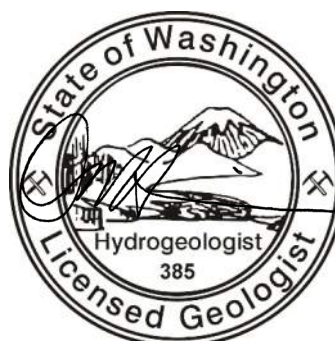
MAR-2020	BY: BMG/SCC
PROJECT NO. 080109-001-12	REVISED BY: EAC / RAP / WEG

FIGURE NO. **3**

MEMORANDUM

Project No. 080109-001-12

March 2, 2021

To: Valerie Porter, Associate Planner, City of Issaquah**cc:** Joe Giuseffi, Car Wash Enterprises, Inc.
William Joyce, Joyce Ziker Partners, PLLC
Renee Knecht, AECOM**From:****Breeyn Greer, PE**
Project Remediation Engineer
bgreer@aspectconsulting.com

3/2/2021

Douglas L. Hillman**Doug Hillman, LHG**
Principal Hydrogeologist
dhillman@aspectconsulting.com**Re: Supplemental Site Investigation Data**
55 NW Gilman Blvd, Issaquah, Washington

Aspect Consulting, LLC's (Aspect) work continues towards the cleanup and redevelopment of the former Casey's Car Care property located at 55 NW Gilman Boulevard in Issaquah, Washington (the Property; Figure 1). Car Wash Enterprises, Inc. (CWE) plans to redevelop the Property in 2022 and has been working on investigation and remediation since purchasing the Property in 2016. Aspect recently supported CWE through a source removal excavation (2019 Removal Action; Aspect, 2020a) and supplemental investigation in 2020, as outlined in the Work Plan (Aspect 2020b). The purpose of this memorandum is to provide the City of Issaquah (City) with a summary of recently collected supplemental post-excavation soil quality data.

Aspect conducted this investigation and cleanup work on behalf of CWE and with regulatory oversight from the Washington State Pollution Liability Insurance Agency (PLIA) to ensure compliance with the state environmental regulations. Our work will be completed as the substantial equivalent to a cleanup with Washington State Department of Ecology (Ecology) oversight and in compliance with the Model Toxics Control Act (Revised Code of Washington [RCW] Chapter 70A.305) and its implementing regulations (Washington Administrative Code [WAC] 173-340) (collectively referred to as MTCA). The Site, which includes on- and off- Property areas where

contamination has come to be located, is registered in PLIA's technical assistance program as Project No. PNW163. PLIA is providing ongoing input and direction on the cleanup approach, including issuance of formal opinion letters.

Project Background

The 2019 Removal Action completed at the Property involved excavation and off-site disposal of petroleum-contaminated soil (PCS) to the maximum extent practicable. The 2019 Removal Action, documented in Site Cleanup Report (Aspect, 2020a), occurred following demolition of all aboveground structures and concurrently with the removal of all remaining underground storage tanks (USTs) and underground service station appurtenances. This was the first phase of a planned two-phase cleanup project. The second phase will involve the use of *in situ* treatment technologies to remediate residual petroleum hydrocarbon impacts to soil and groundwater. The objective of the planned remedial actions is to achieve, on a Site-wide basis, applicable cleanup levels (likely Method A) MTCA at the appropriate points of compliance within a reasonable restoration time frame.

Supplemental Investigation—A Step in the Cleanup Process

Aspect conducted a supplemental soil investigation to further assess the nature and extent of residual soil contamination in areas that were inaccessible for removal via excavation. This work was conducted in accordance with the Work Plan dated July 8, 2020 (Aspect, 2020b) and approved by PLIA on September 3, 2020. Aspect continues to work with PLIA and will cooperatively obtain the soil and/or groundwater quality data necessary to select, design, and implement the final cleanup remedy in conjunction with Property redevelopment.

The supplemental investigation was completed in November 2020 and involved advancing borings both on- and off-Property to address data gaps and provide supplemental data to facilitate design of *in situ* treatment of residual contamination. This supplemental data will also ensure sufficient information has been collected to support the selection of a MTCA-compliant final remedy consistent with the supplemental focused feasibility study (FFS) and in accordance with Chapter 173-340-350(8) WAC.

A total of 14 borings were advanced via direct push technology under the supervision of an Aspect field geologist (Figure 2). Soil cores were screened continuously for indicators of petroleum impacts using visual, olfactory, and by headspace photoionization detector methods. The minimum target depth for each boring was 20 feet below ground surface (bgs), or, to the depth at which impacts were no longer observed. Sampling objectives consisted of the following:

- Borings B-1 through B-4 are within the 2019 Removal Action area at locations where an unknown thickness of PCS remained below the base of the excavation. These borings were primarily intended to define the vertical delineation of PCS.
- Borings B-5 through B-14 are located outside the areas of known PCS. These borings were primarily intended to define the lateral extent of PCS on- and off-Property.

Soil samples were collected from each boring at the depth of highest observed impacts, or at a depth of 16 feet bgs in the absence of field indicators of contamination. Soil samples were analyzed for the following:

- Benzene, toluene, ethylbenzene and total xylenes using U.S. Environmental Protection Agency (EPA) Method 8021
- Total petroleum hydrocarbons (TPH) in the gasoline, diesel, and heavy-oil ranges using Northwest Method TPH-Gx, and Dx, respectively

Samples with the highest TPH results were also analyzed for the following:

- Volatile organic compounds using EPA Method 8260
- Polycyclic aromatic hydrocarbons using EPA Method 8270 SIM
- Polychlorinated biphenyls using EPA Method 8082

Groundwater samples were not collected during this supplemental investigation.

Investigation Results—PCS Laterally and Vertically Bounded

The supplemental investigations successfully defined the lateral and vertical bounds of PCS in soil. This was completed laterally by completing clean borings around the perimeter of known residual PCS, and vertically by identifying and analyzing a clean boundary sample deeper than depths of residual PCS. Results from the supplemental investigation are presented in Table 1 and on Figure 2. Laboratory reports are presented in Appendix A.

Figure 2 shows the analytical results from the recent supplemental and previous investigations. Supplemental investigation borings with soil impacts have the analytical data presented on the figure. Recent and historical borings with no impacts are shown with a green halo. Complete soil analytical results from the supplemental investigation can be found in Table 1. Residual PSC areas on the figure are based on recent and historical borings as well as observations made at the bottom of the excavation during the 2019 Removal Action. Only two borings, B-8 and B-11, indicate soil impacts in the City of Issaquah right-of-way (ROW; Permit ROW20-00123, Appendix B) at depths of 11.5 to 17 feet bgs.

Groundwater samples were not collected during this supplemental investigation; however, historical 2016 groundwater data (Aspect, 2018) is presented on Figure 3. As indicated by depth to water measurements, the groundwater gradient is generally to the northwest. Sampling results indicate that MW-16 and MW-17 in the access road ROW to the north of the Property are not impacted, and AC-5 in the 1st Avenue NW ROW to the west of the Property has impacts below the likely MTCA Method A cleanup level. These results indicate that the off-Property groundwater impacts at the Site are minimal; no exceedances of MTCA cleanup levels are present for samples from the wells within the City right-of-way.

Next Steps

Work continues in support of Property redevelopment starting in summer 2022. Another supplemental groundwater investigation of on-Property groundwater quality is being planned for spring 2021 to further support remedy selection and design. That data, and supplemental investigation data presented here, will be used to support the next step in the MTCA cleanup process, which is preparation of a supplemental FFS that evaluates cleanup alternatives and supports selection of the most practicable solution in accordance with MTCA criteria. The FFS Report is subject to PLIA review and approval prior to implementation.

References

- Aspect Consulting, LLC (Aspect), 2018, Focused Feasibility Study, 55 NW Gilman Blvd., Issaquah, Washington, prepared for Car Wash Enterprises, Inc., May 10, 2018.
- Aspect Consulting, LLC (Aspect), 2020a, Site Cleanup Report, Former Casey's Car Care, 55 NW Gilman Blvd., Issaquah, Washington, prepared for Car Wash Enterprises, Inc., August 5, 2020.
- Aspect Consulting, LLC (Aspect), 2020b, Work Plan for Supplemental Soil Investigation, Former Casey's Car Care, 55 NW Gilman Blvd., Issaquah, Washington, prepared for Car Wash Enterprises, Inc., July 8, 2020.

Limitations

Work for this project was performed for Car Wash Enterprises (Client), and this memorandum was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This memorandum does not represent a legal opinion. No other warranty, expressed or implied, is made.

All reports prepared by Aspect Consulting for the Client apply only to the services described in the Agreement(s) with the Client. Any use or reuse by any party other than the Client is at the sole risk of that party, and without liability to Aspect Consulting. Aspect Consulting's original files/reports shall govern in the event of any dispute regarding the content of electronic documents furnished to others.

Please refer to Appendix C titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

Attachments: Table 1 – Soil Analytical Results
 Figure 1 – Vicinity Map
 Figure 2 – Soil Quality Summary
 Figure 3 – Groundwater Summary
 Appendix A – Friedman & Bruya Laboratory Reports
 Appendix B – City of Issaquah Right of Way Permit ROW20-00123
 Appendix C – Report Limitations and Guidelines for Use

TABLE

Table 1. Soil Analytical Results

Project No. 080109, Car Wash Enterprises - Gilman Blvd. Issaquah, Washington

Location Date Depth			B-1 11/16/2020 15 ft	B-1 11/16/2020 22 ft	B-2 11/16/2020 16 ft	B-2 11/16/2020 23 ft	B-3 11/16/2020 12.5 ft	B-3 11/16/2020 22 ft	B-4 11/16/2020 11 ft	B-4 11/16/2020 16.5 ft	B-5 11/16/2020 16 ft	B-6 11/18/2020 16 ft	B-7 11/18/2020 16 ft	B-8 11/17/2020 17 ft
Analyte	Unit	MTCA Method A Screening Level ¹												
BTEX														
Benzene	mg/kg	0.03	< 0.4 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	mg/kg	7	6.5	< 0.02 U	0.11	< 0.02 U	< 0.02 U	< 0.02 U	< 0.1 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	4.1
Ethylbenzene	mg/kg	6	0.62	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	0.12	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	0.33
Total Xylenes	mg/kg	9	2.3	< 0.06 U	0.12	< 0.06 U	< 0.06 U	< 0.06 U	< 0.3 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	0.94
PAHs														
1-Methylnaphthalene	mg/kg	34	0.85	--	--	--	--	--	< 0.05 U	--	--	--	--	0.38
2-Methylnaphthalene	mg/kg	320	1.8	--	--	--	--	--	< 0.05 U	--	--	--	--	0.53
Acenaphthene	mg/kg	4800	0.021	--	--	--	--	--	< 0.05 U	--	--	--	--	0.011
Acenaphthylene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Anthracene	mg/kg	24000	0.019	--	--	--	--	--	< 0.05 U	--	--	--	--	0.014
Benzo(g,h,i)perylene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Fluoranthene	mg/kg	3200	0.011	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Fluorene	mg/kg	3200	0.02	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Naphthalene	mg/kg	5	0.34	--	--	--	--	--	< 0.05 U	--	--	--	--	0.26
Phenanthrene	mg/kg		0.034	--	--	--	--	--	< 0.05 U	--	--	--	--	0.019
Pyrene	mg/kg	2400	0.013	--	--	--	--	--	< 0.05 U	--	--	--	--	0.011
Benz(a)anthracene	mg/kg		0.01	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Benzo(a)pyrene	mg/kg	0.1	< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Benzo(b)fluoranthene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Benzo(k)fluoranthene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Chrysene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Dibenzo(a,h)anthracene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
Indeno(1,2,3-cd)pyrene	mg/kg		< 0.01 U	--	--	--	--	--	< 0.05 U	--	--	--	--	< 0.01 U
PCBAro														
Aroclor 1016	mg/kg	5.6	< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1221	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1232	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1242	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1248	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1254	mg/kg	0.5	< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1260	mg/kg	0.5	< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1262	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Aroclor 1268	mg/kg		< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
Total PCBs	mg/kg	1	< 0.02 U	--	--	--	--	--	< 0.02 U	--	--	--	--	< 0.02 U
TPHs														
Gasoline Range Organics	mg/kg	30	540	< 5 U	18	< 5 U	< 5 U	< 5 U	260	< 5 U	< 5 U	< 5 U	< 5 U	260
Diesel Range Organics	mg/kg	2000	63 X	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	230 X	< 50 U	< 50 U	< 50 U	< 50 U	86 X
Motor Oil Range Organics	mg/kg	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U

Table 1. Soil Analytical Results

Project No. 080109, Car Wash Enterprises - Gilman Blvd. Issaquah, Washington

Location Date Depth			B-8 11/17/2020 21 ft	B-9 11/17/2020 17.5 ft	B-9 11/17/2020 21 ft	B-10 11/16/2020 15 ft	B-11 11/17/2020 11.5 ft	B-11 11/17/2020 16 ft	B-12 11/17/2020 11.5 ft	B-12 11/17/2020 16 ft	B-13 11/17/2020 17.5 ft	B-14 11/18/2020 16 ft
Analyte	Unit	MTCA Method A Screening Level ¹										
BTEX												
Benzene	mg/kg	0.03	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Toluene	mg/kg	7	< 0.02 U	0.23	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Ethylbenzene	mg/kg	6	< 0.02 U	0.027	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Total Xylenes	mg/kg	9	< 0.06 U	0.22	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U	< 0.06 U
PAHs												
1-Methylnaphthalene	mg/kg	34	--	--	--	--	--	--	--	--	--	--
2-Methylnaphthalene	mg/kg	320	--	--	--	--	--	--	--	--	--	--
Acenaphthene	mg/kg	4800	--	--	--	--	--	--	--	--	--	--
Acenaphthylene	mg/kg		--	--	--	--	--	--	--	--	--	--
Anthracene	mg/kg	24000	--	--	--	--	--	--	--	--	--	--
Benzo(g,h,i)perylene	mg/kg		--	--	--	--	--	--	--	--	--	--
Fluoranthene	mg/kg	3200	--	--	--	--	--	--	--	--	--	--
Fluorene	mg/kg	3200	--	--	--	--	--	--	--	--	--	--
Naphthalene	mg/kg	5	--	--	--	--	--	--	--	--	--	--
Phenanthrene	mg/kg		--	--	--	--	--	--	--	--	--	--
Pyrene	mg/kg	2400	--	--	--	--	--	--	--	--	--	--
Benz(a)anthracene	mg/kg		--	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	mg/kg	0.1	--	--	--	--	--	--	--	--	--	--
Benzo(b)fluoranthene	mg/kg		--	--	--	--	--	--	--	--	--	--
Benzo(k)fluoranthene	mg/kg		--	--	--	--	--	--	--	--	--	--
Chrysene	mg/kg		--	--	--	--	--	--	--	--	--	--
Dibenzo(a,h)anthracene	mg/kg		--	--	--	--	--	--	--	--	--	--
Indeno(1,2,3-cd)pyrene	mg/kg		--	--	--	--	--	--	--	--	--	--
PCBAro												
Aroclor 1016	mg/kg	5.6	--	--	--	--	--	--	--	--	--	--
Aroclor 1221	mg/kg		--	--	--	--	--	--	--	--	--	--
Aroclor 1232	mg/kg		--	--	--	--	--	--	--	--	--	--
Aroclor 1242	mg/kg		--	--	--	--	--	--	--	--	--	--
Aroclor 1248	mg/kg		--	--	--	--	--	--	--	--	--	--
Aroclor 1254	mg/kg	0.5	--	--	--	--	--	--	--	--	--	--
Aroclor 1260	mg/kg	0.5	--	--	--	--	--	--	--	--	--	--
Aroclor 1262	mg/kg		--	--	--	--	--	--	--	--	--	--
Aroclor 1268	mg/kg		--	--	--	--	--	--	--	--	--	--
Total PCBs	mg/kg	1	--	--	--	--	--	--	--	--	--	--
TPHs												
Gasoline Range Organics	mg/kg	30	< 5 U	29	< 5 U	< 5 U	31	6.4	< 5 U	< 5 U	< 5 U	< 5 U
Diesel Range Organics	mg/kg	2000	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U	< 50 U
Motor Oil Range Organics	mg/kg	2000	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U	< 250 U

Notes:**Blue** - detected

Blue Shaded - Detected result exceeded screening level

U - Analyte not detected at or above Reporting Limit (RL) shown

J - Result value estimated

UJ - Analyte not detected and the Reporting Limit (RL) is an estimate

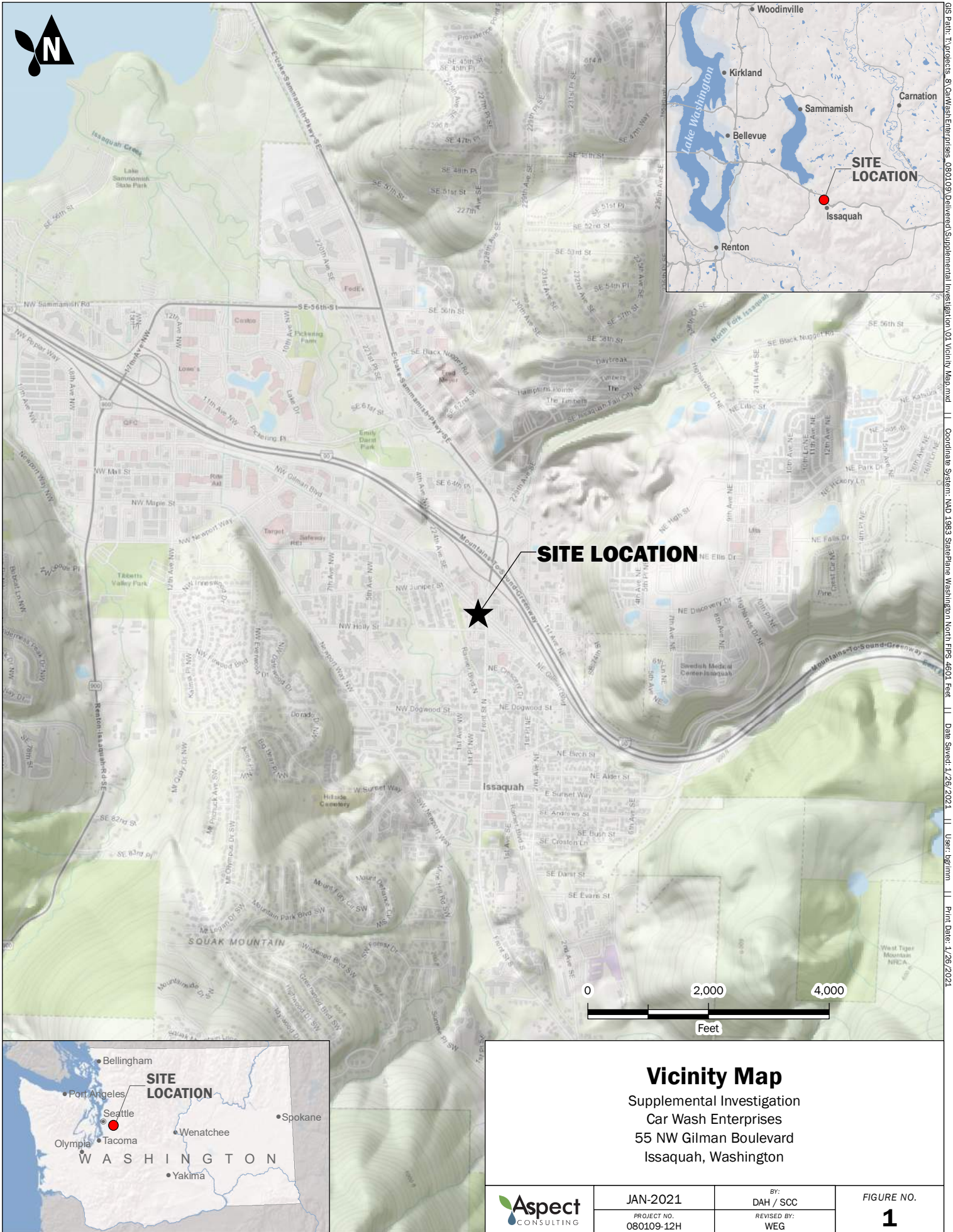
X - Chromatographic pattern does not match fuel standard used for quantitation

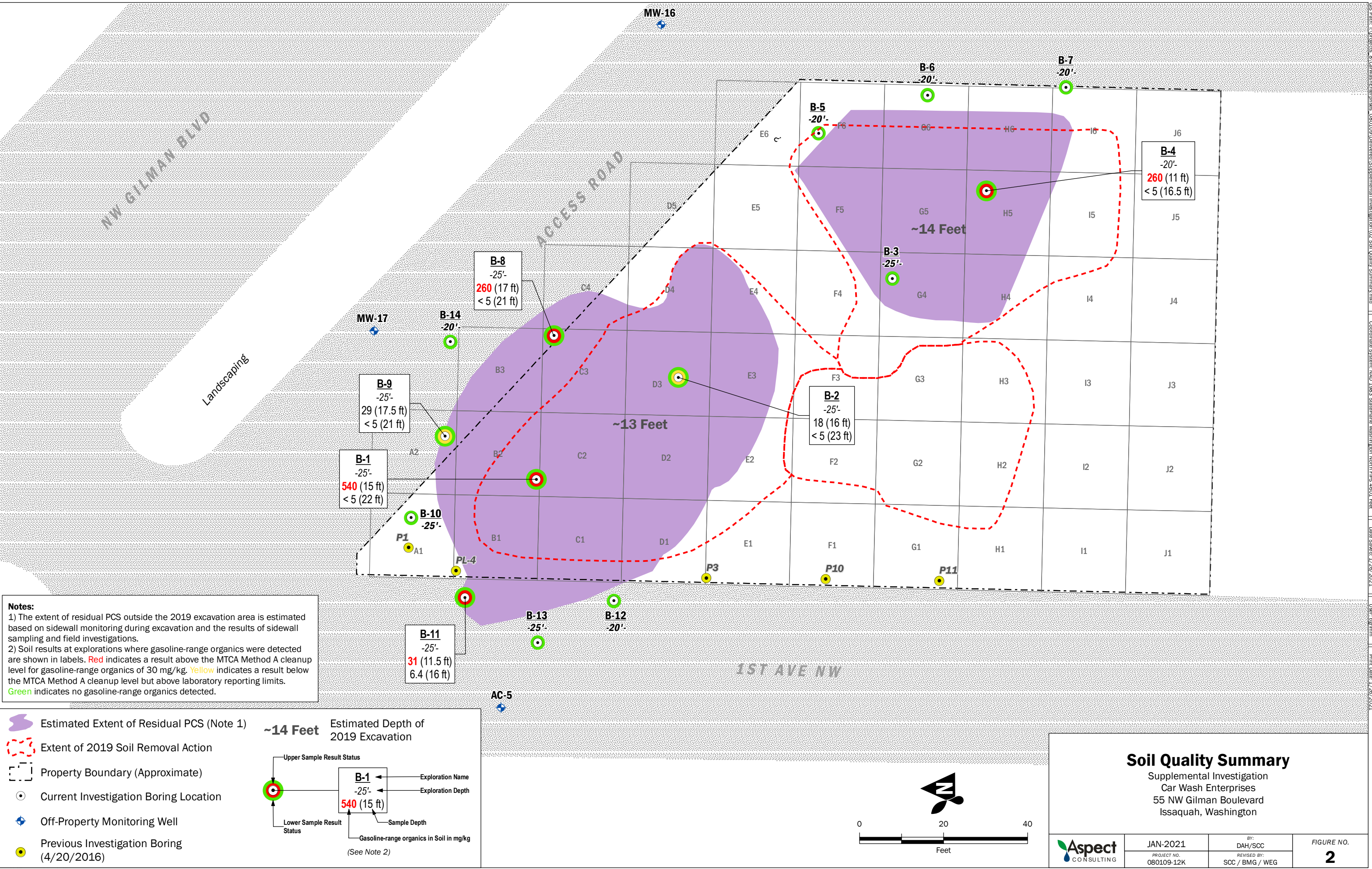
"--" - indicates results not available

1) Screening Level corresponds with the MTCA Method A, when Method A Screening level not available, Method B is listed

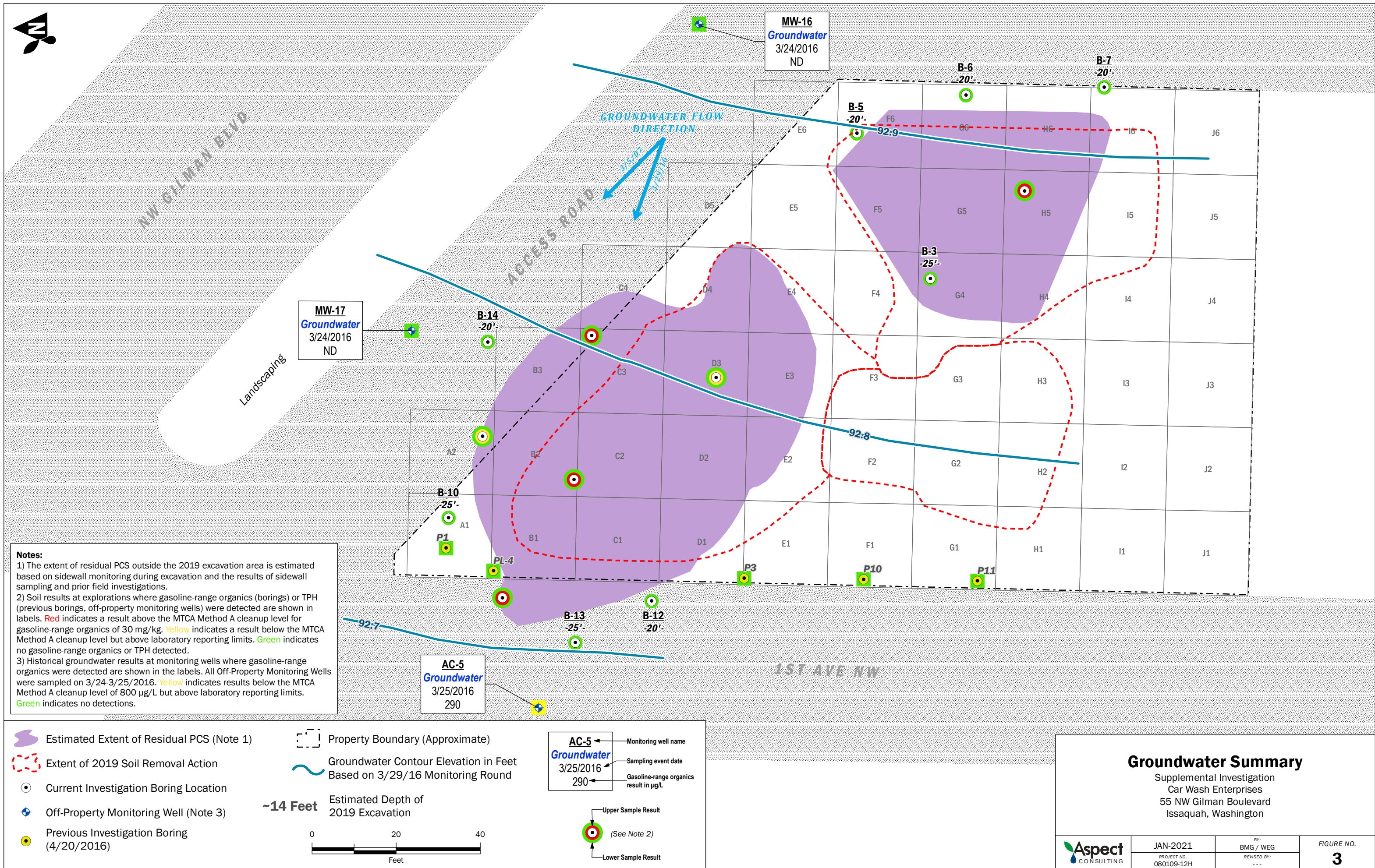
mg/kg = milligrams per kilogram

FIGURES





GIS Path: T:\projects_8\Car Wash Enterprises_080109\Delivered\Supplemental Investigation\02 Soil Quality Summary.mxd | Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet | Date Saved: 1/26/2021 | User: bkrum | Print Date: 1/26/2021



APPENDIX A

Friedman & Bruya Laboratory Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 1, 2020

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on November 16, 2020 from the Car Wash Enterprises PO 080109, F&BI 011287 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Aspect Data, Baxter Call
ASP1201R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 16, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Car Wash Enterprises PO 080109, F&BI 011287 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
011287 -01	B-04-11
011287 -02	B-04-16.5
011287 -03	B-02-12
011287 -04	B-02-16
011287 -05	B-02-23
011287 -06	B-03-12.5
011287 -07	B-03-16
011287 -08	B-03-22
011287 -09	B-05-10
011287 -10	B-05-16
011287 -11	B-10-11
011287 -12	B-10-15
011287 -13	B-10-23
011287 -14	B-01-12
011287 -15	B-01-15
011287 -16	B-01-22

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

Date Extracted: 11/24/20

Date Analyzed: 11/25/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND TPH AS GASOLINE
USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B-04-11 011287-01 1/5	<0.02 j	<0.1	0.12	<0.3	260	97
B-04-16.5 011287-02	<0.02	<0.02	<0.02	<0.06	<5	91
B-02-16 011287-04	<0.02	0.11	<0.02	0.12	18	92
B-02-23 011287-05	<0.02	<0.02	<0.02	<0.06	<5	89
B-03-12.5 011287-06	<0.02	<0.02	<0.02	<0.06	<5	90
B-03-22 011287-08	<0.02	<0.02	<0.02	<0.06	<5	86
B-05-16 011287-10	<0.02	<0.02	<0.02	<0.06	<5	91
B-10-15 011287-12	<0.02	<0.02	<0.02	<0.06	<5	92
B-01-15 011287-15 1/20	<0.4	6.5	0.62	2.3	540	89
B-01-22 011287-16	<0.02	<0.02	<0.02	<0.06	<5	91
Method Blank 00-2592 MB	<0.02	<0.02	<0.02	<0.06	<5	78

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

Date Extracted: 11/20/20

Date Analyzed: 11/20/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
B-04-11 011287-01	230 x	<250	93
B-04-16.5 011287-02	<50	<250	92
B-02-16 011287-04	<50	<250	94
B-02-23 011287-05	<50	<250	89
B-03-12.5 011287-06	<50	<250	93
B-03-22 011287-08	<50	<250	90
B-05-16 011287-10	<50	<250	94
B-10-15 011287-12	<50	<250	91
B-01-15 011287-15	63 x	<250	90
B-01-22 011287-16	<50	<250	92
Method Blank 00-2577 MB	<50	<250	94

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-01-15	Client:	Aspect Consulting, LLC
Date Received:	11/16/20	Project:	Car Wash Enterprises PO 080109
Date Extracted:	11/20/20	Lab ID:	011287-15 1/5
Date Analyzed:	11/20/20	Data File:	112009.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	79	32	100
Phenol-d6	84	46	107
Nitrobenzene-d5	98	24	127
2-Fluorobiphenyl	85	46	108
2,4,6-Tribromophenol	86	25	127
Terphenyl-d14	84	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.34
2-Methylnaphthalene	1.8
1-Methylnaphthalene	0.85
Acenaphthylene	<0.01
Acenaphthene	0.021
Fluorene	0.020
Phenanthrene	0.034
Anthracene	0.019
Fluoranthene	0.011
Pyrene	0.013
Benz(a)anthracene	0.010
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises PO 080109
Date Extracted:	11/20/20	Lab ID:	00-2570 mb 1/5
Date Analyzed:	11/20/20	Data File:	112005.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	83	32	100
Phenol-d6	88	46	107
Nitrobenzene-d5	91	24	127
2-Fluorobiphenyl	94	46	108
2,4,6-Tribromophenol	81	25	127
Terphenyl-d14	92	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-01-15	Client:	Aspect Consulting, LLC
Date Received:	11/16/20	Project:	Car Wash Enterprises PO 080109
Date Extracted:	11/20/20	Lab ID:	011287-15 1/6
Date Analyzed:	11/20/20	Data File:	112011.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	75	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises PO 080109
Date Extracted:	11/20/20	Lab ID:	00-2571 mb 1/6
Date Analyzed:	11/20/20	Data File:	112003.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	103	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 011330-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	88	70-117
Ethylbenzene	mg/kg (ppm)	0.5	90	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	100	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: 011287-04 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	86	90	73-135	5

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	86	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 011310-11 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	0.25	66 b	66 b	50-150	0 b
2-Methylnaphthalene	mg/kg (ppm)	0.83	0.50	47 b	49 b	50-150	4 b
1-Methylnaphthalene	mg/kg (ppm)	0.83	0.36	56 b	58 b	50-150	4 b
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	93	96	50-150	3
Acenaphthene	mg/kg (ppm)	0.83	0.010	89	90	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	88	91	50-150	3
Phenanthrene	mg/kg (ppm)	0.83	0.018	85	88	50-150	3
Anthracene	mg/kg (ppm)	0.83	0.013	85	87	50-150	2
Fluoranthene	mg/kg (ppm)	0.83	<0.01	87	90	50-150	3
Pyrene	mg/kg (ppm)	0.83	0.010	85	88	50-150	3
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	86	90	50-150	5
Chrysene	mg/kg (ppm)	0.83	<0.01	86	90	50-150	5
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	92	94	50-150	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	94	99	50-150	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	94	93	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	91	93	50-150	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	93	96	50-150	3
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	85	87	50-150	2

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	84	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	86	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	83	70-130
Acenaphthylene	mg/kg (ppm)	0.83	93	70-130
Acenaphthene	mg/kg (ppm)	0.83	89	70-130
Fluorene	mg/kg (ppm)	0.83	87	70-130
Phenanthrene	mg/kg (ppm)	0.83	86	70-130
Anthracene	mg/kg (ppm)	0.83	85	70-130
Fluoranthene	mg/kg (ppm)	0.83	84	70-130
Pyrene	mg/kg (ppm)	0.83	86	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	86	70-130
Chrysene	mg/kg (ppm)	0.83	87	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	90	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	93	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	94	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	95	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	93	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	90	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080109, F&BI 011287

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
POLYCHLORINATED BIPHENYLS AS
AROCOR 1016/1260 BY EPA METHOD 8082A**

Laboratory Code: 011370-03 1/6 (Matrix Spike) 1/6

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	79	74	29-125	7
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	87	79	25-137	10

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	96	55-137
Aroclor 1260	mg/kg (ppm)	0.25	100	51-150

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

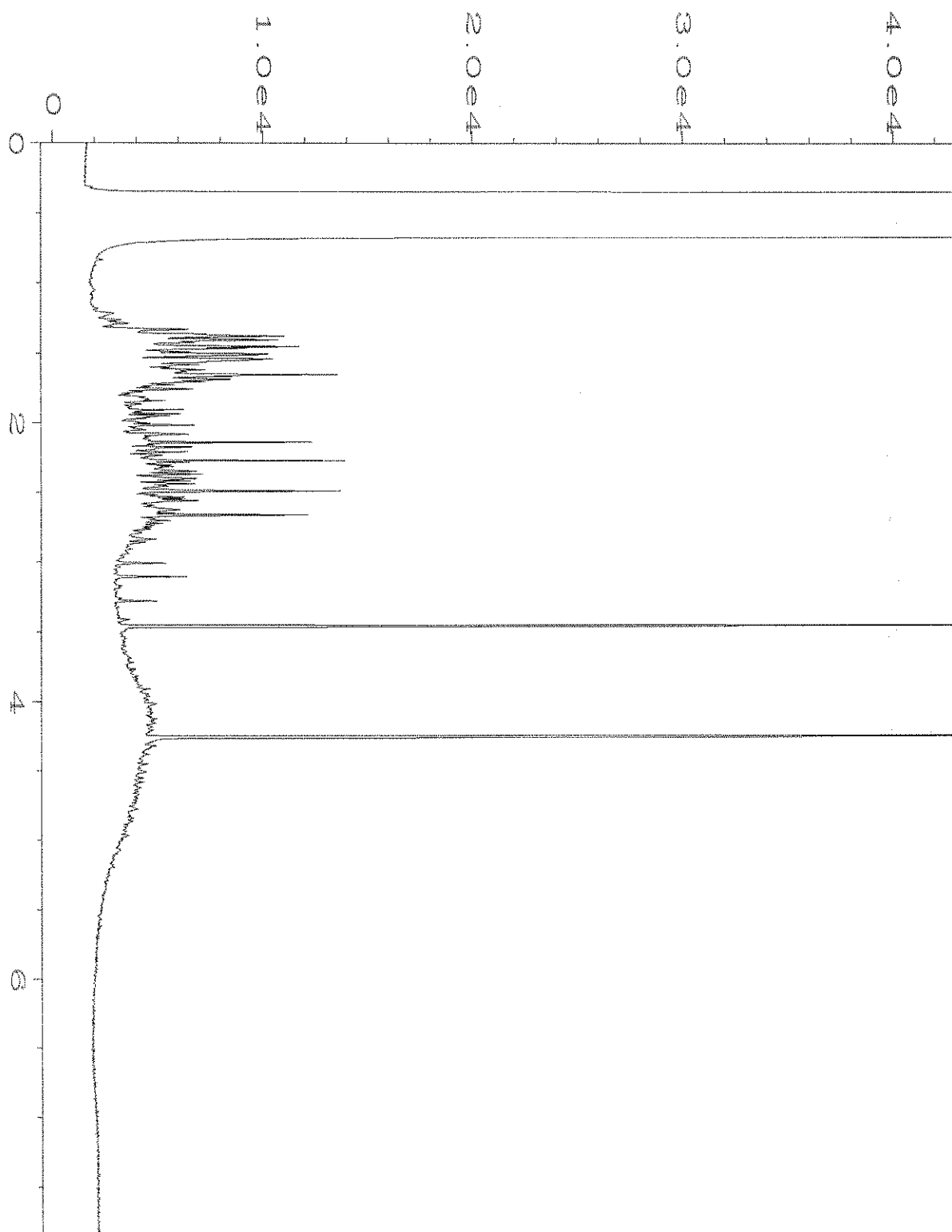
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

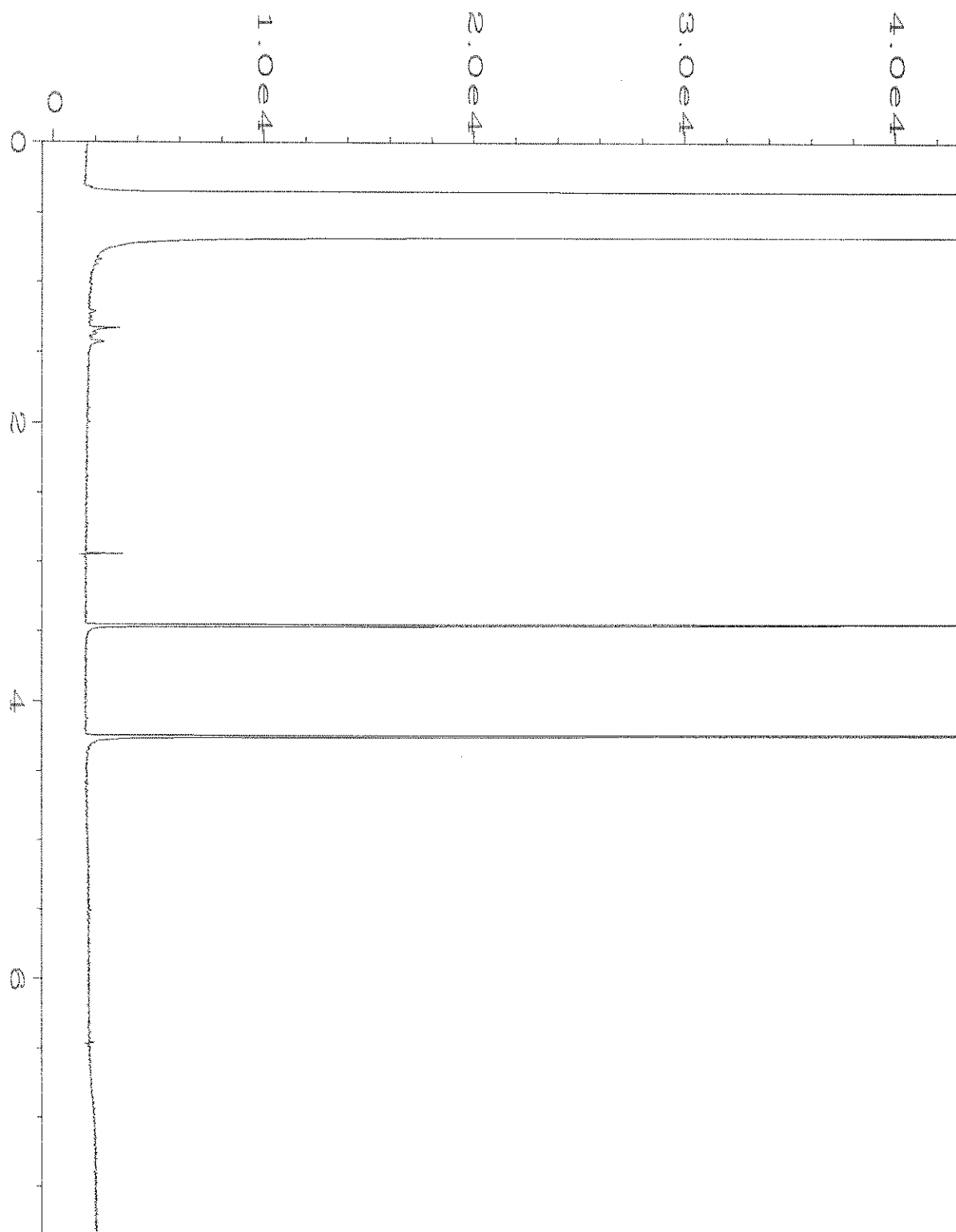
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

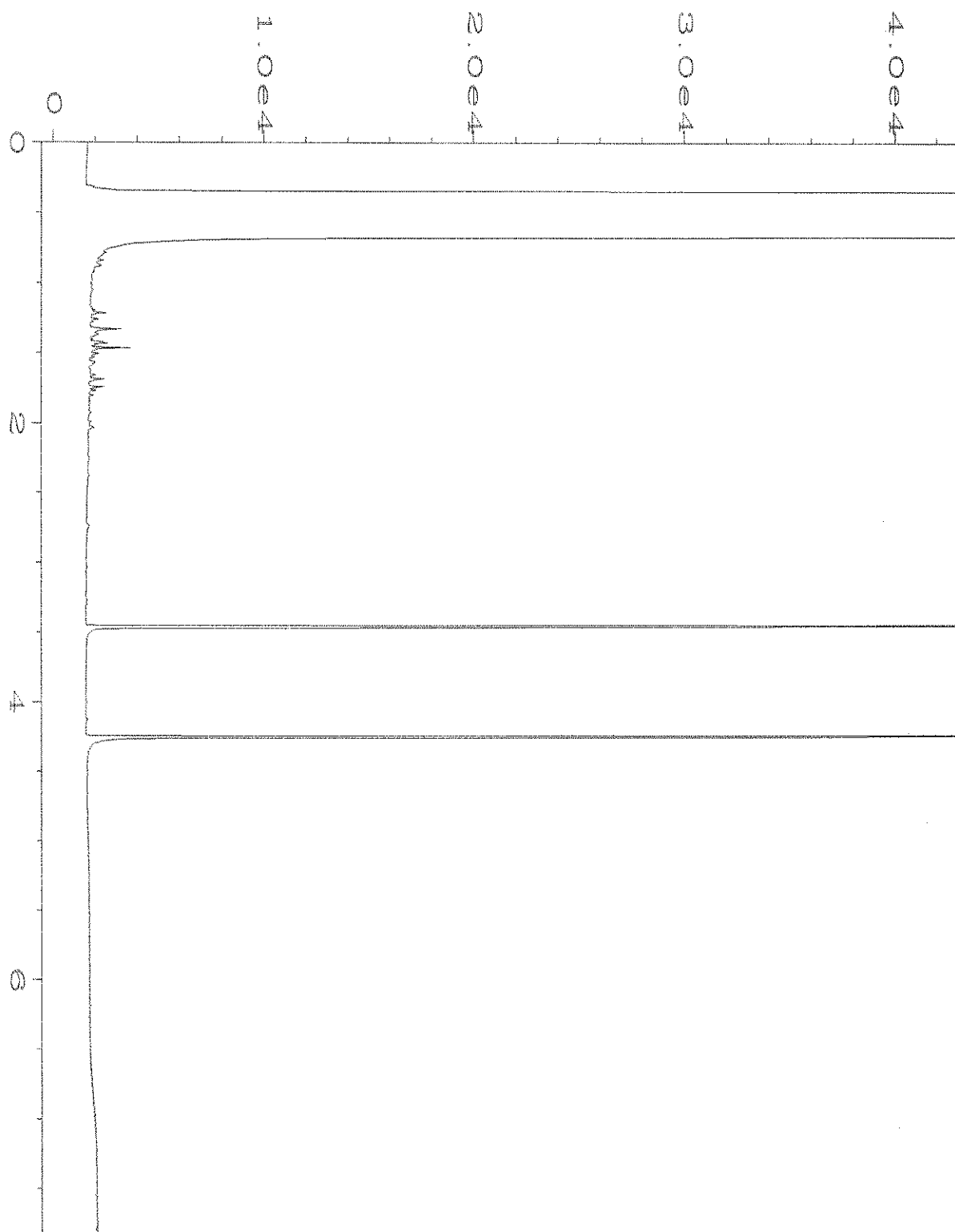
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



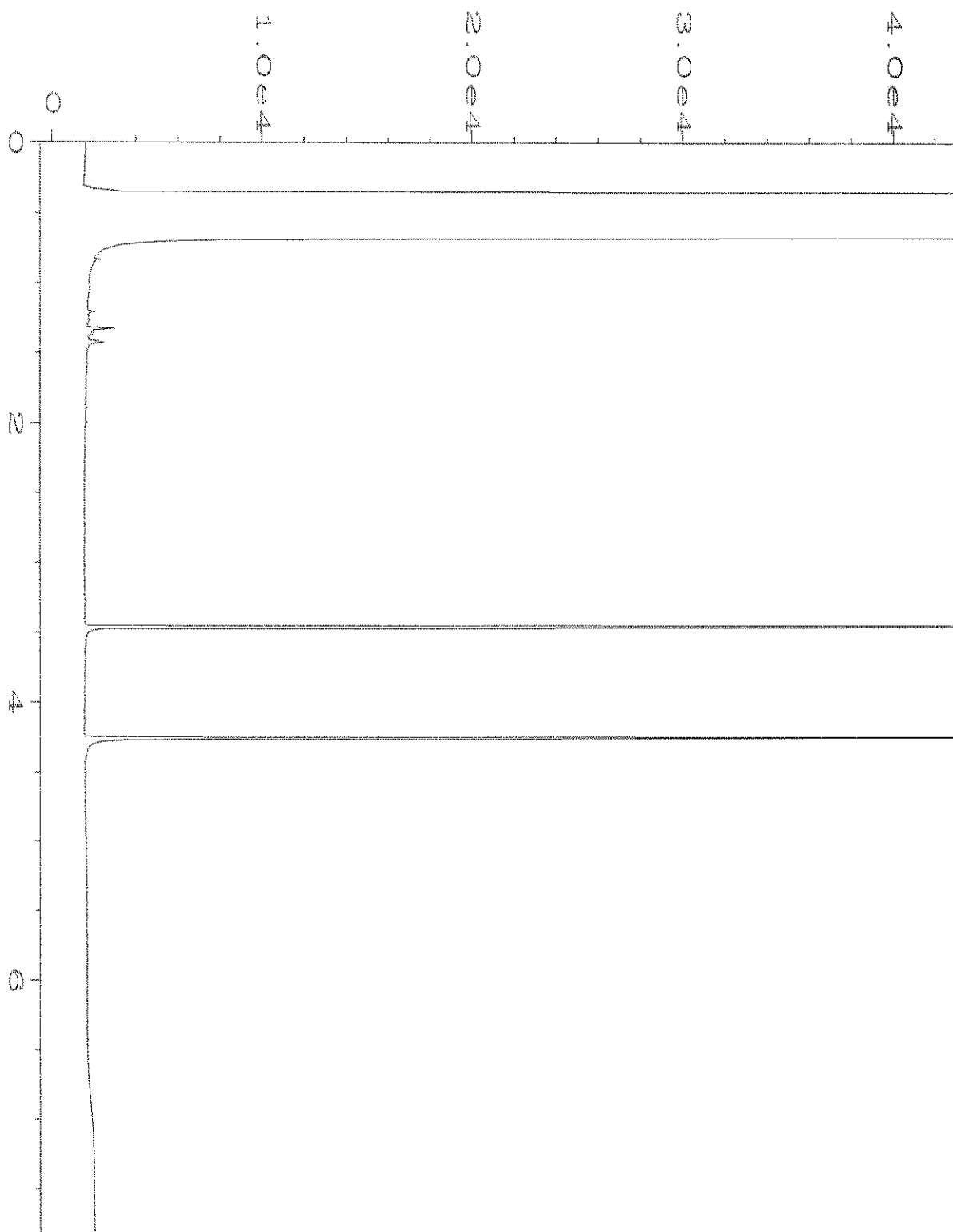
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\038F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 38
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-01	Sequence Line	: 7
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 05:45 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:48 AM		



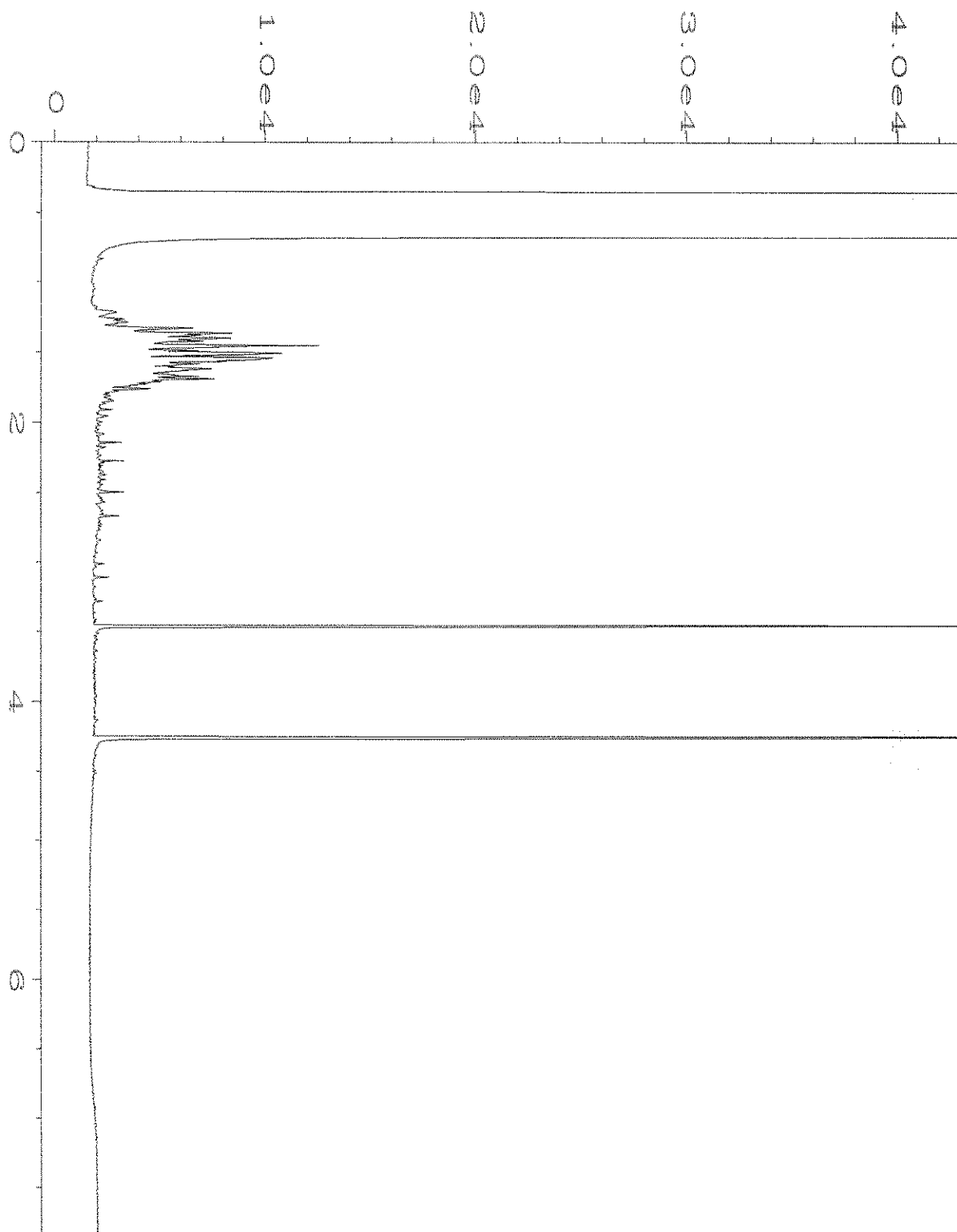
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\039F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 39
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-02	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 05:58 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



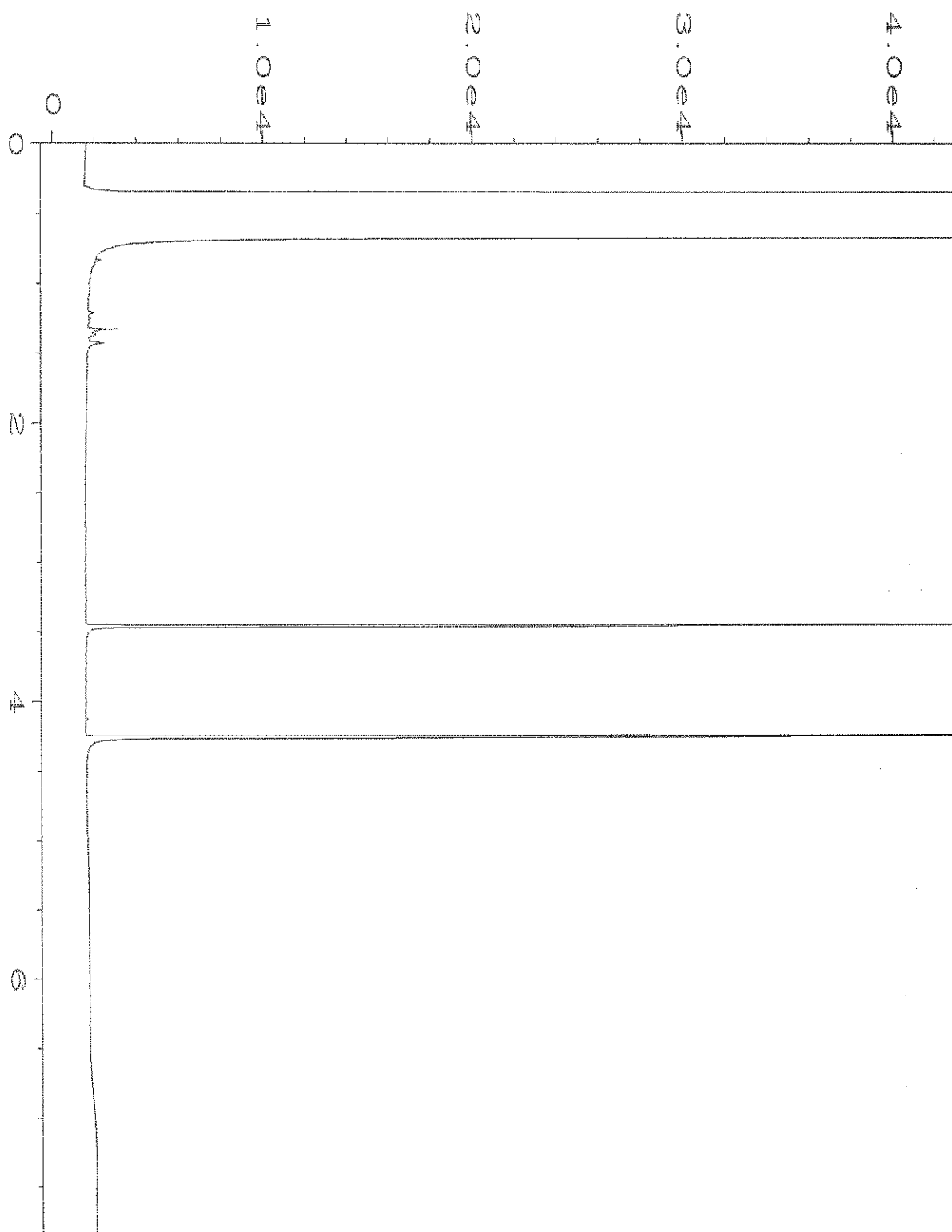
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\040F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 40
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-04	Sequence Line	: 7
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 06:10 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



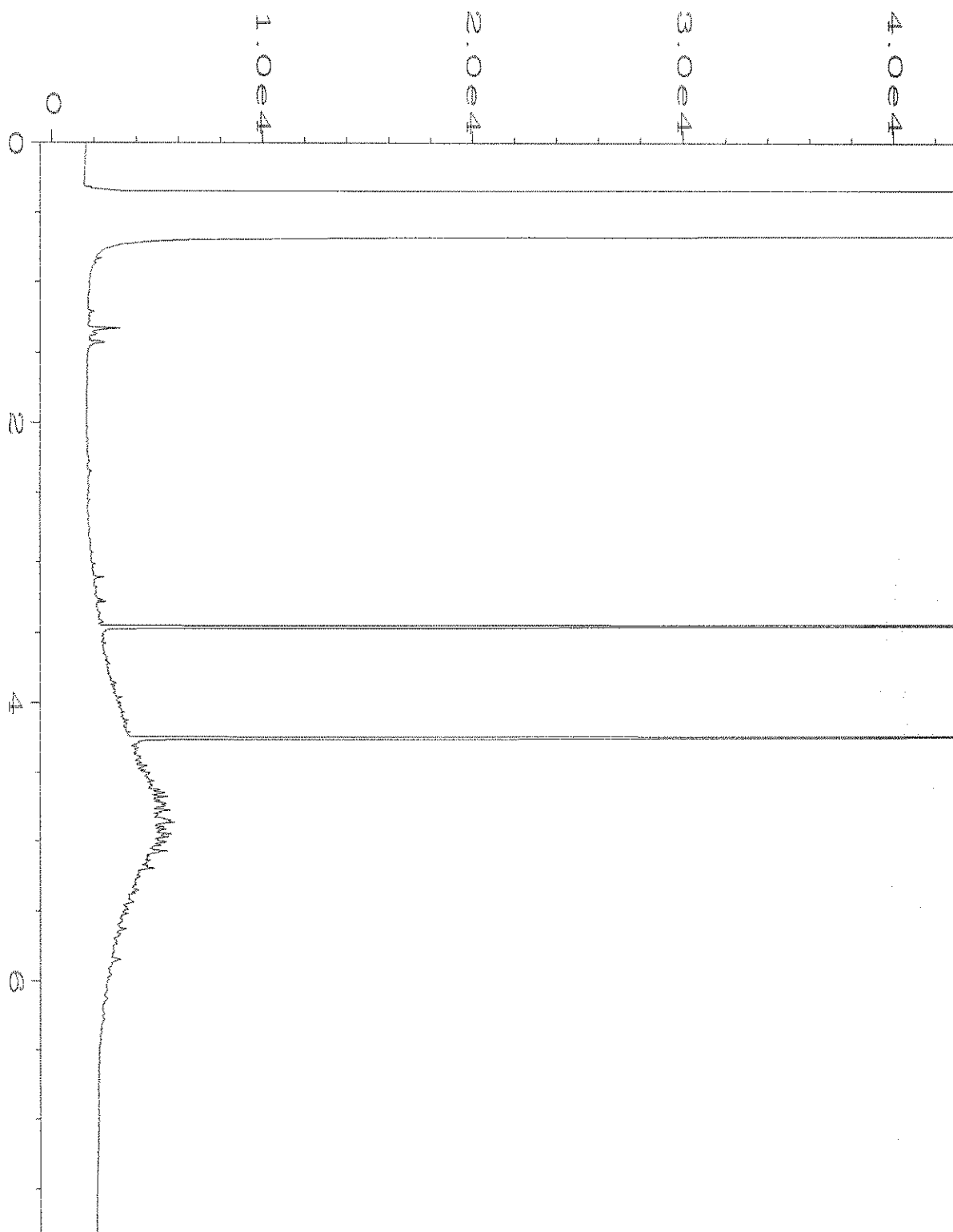
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\041F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 41
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-05	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 06:23 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



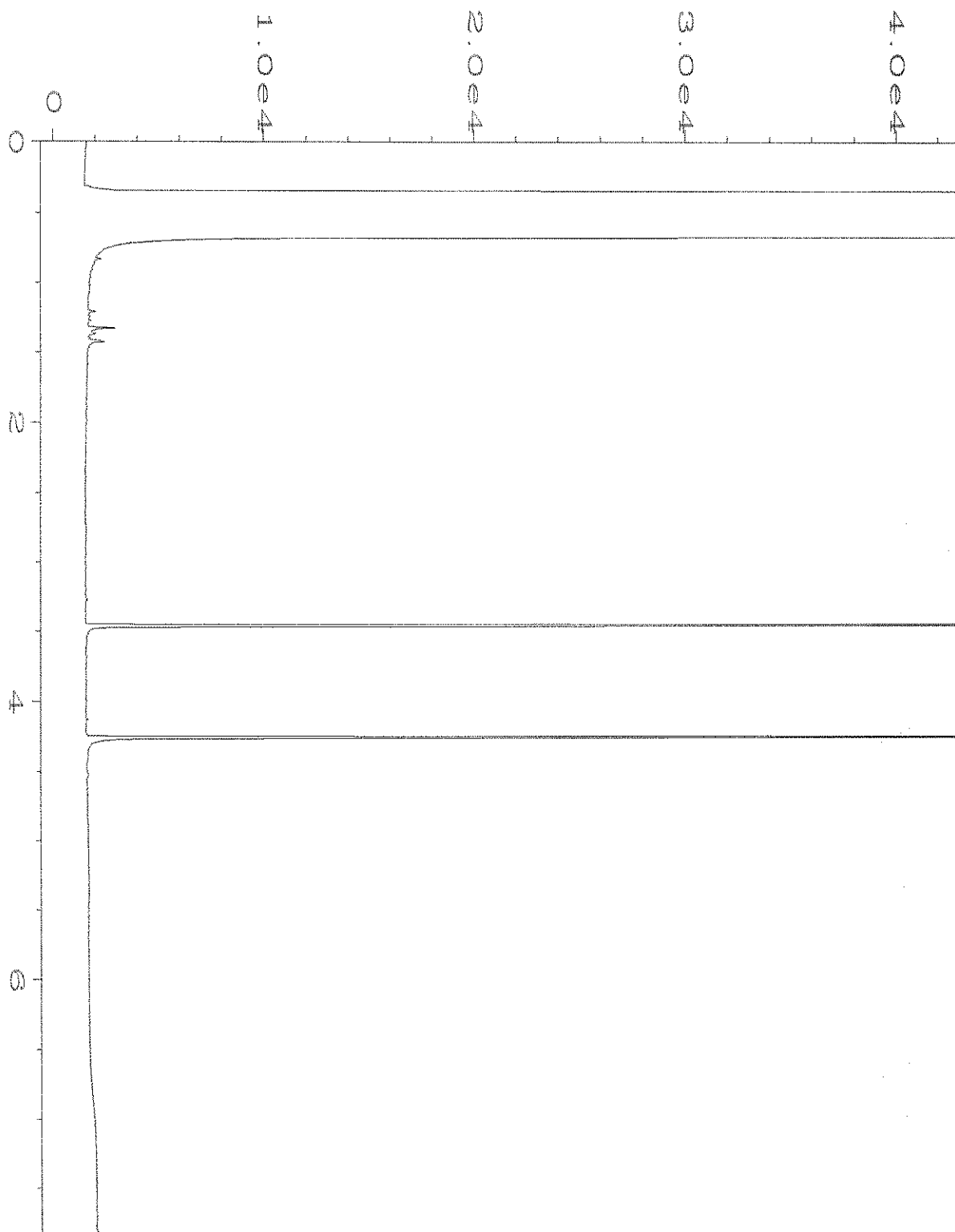
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\042F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 42
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-06	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 06:35 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



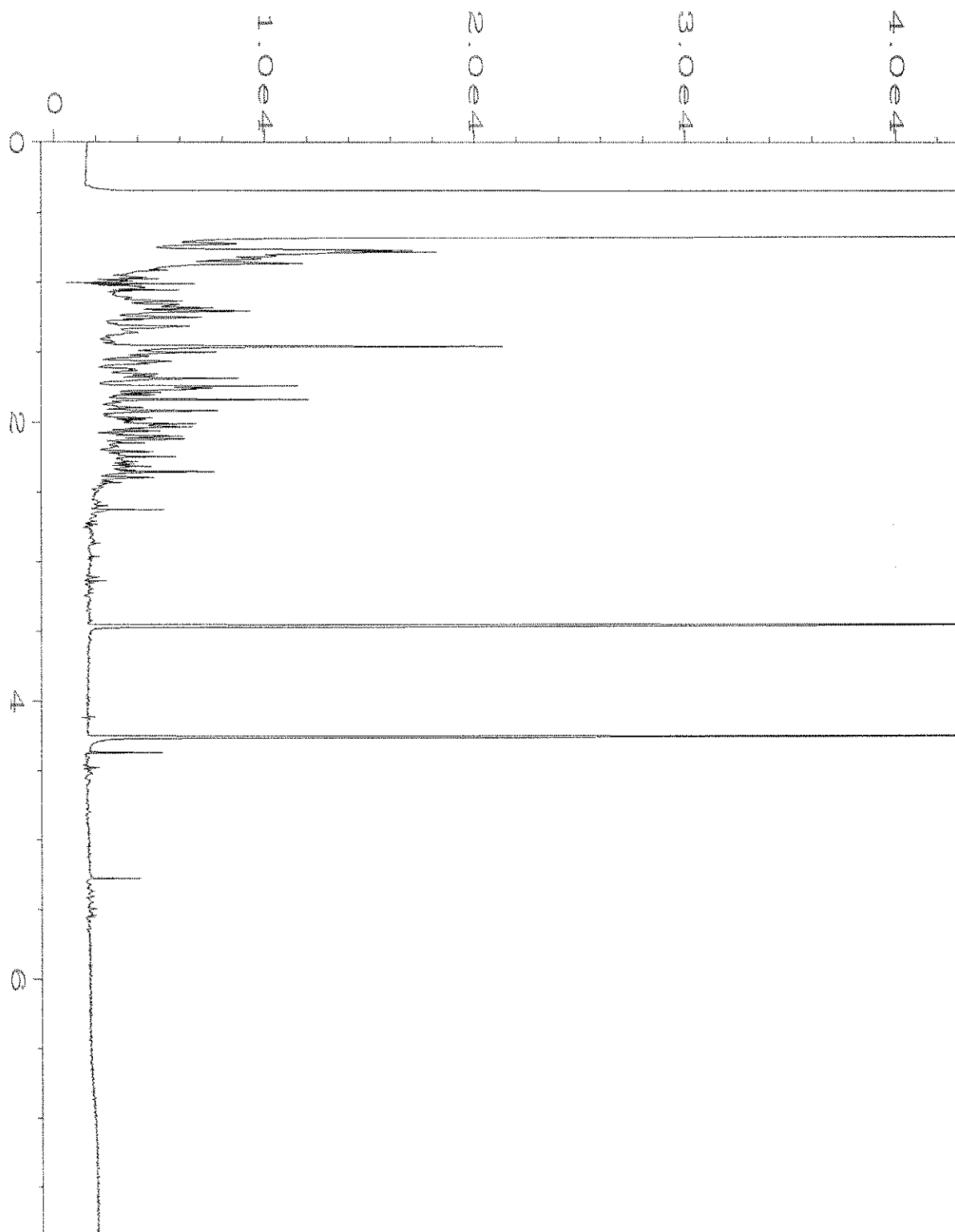
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\043F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 43
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-08	Sequence Line	: 7
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 06:47 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



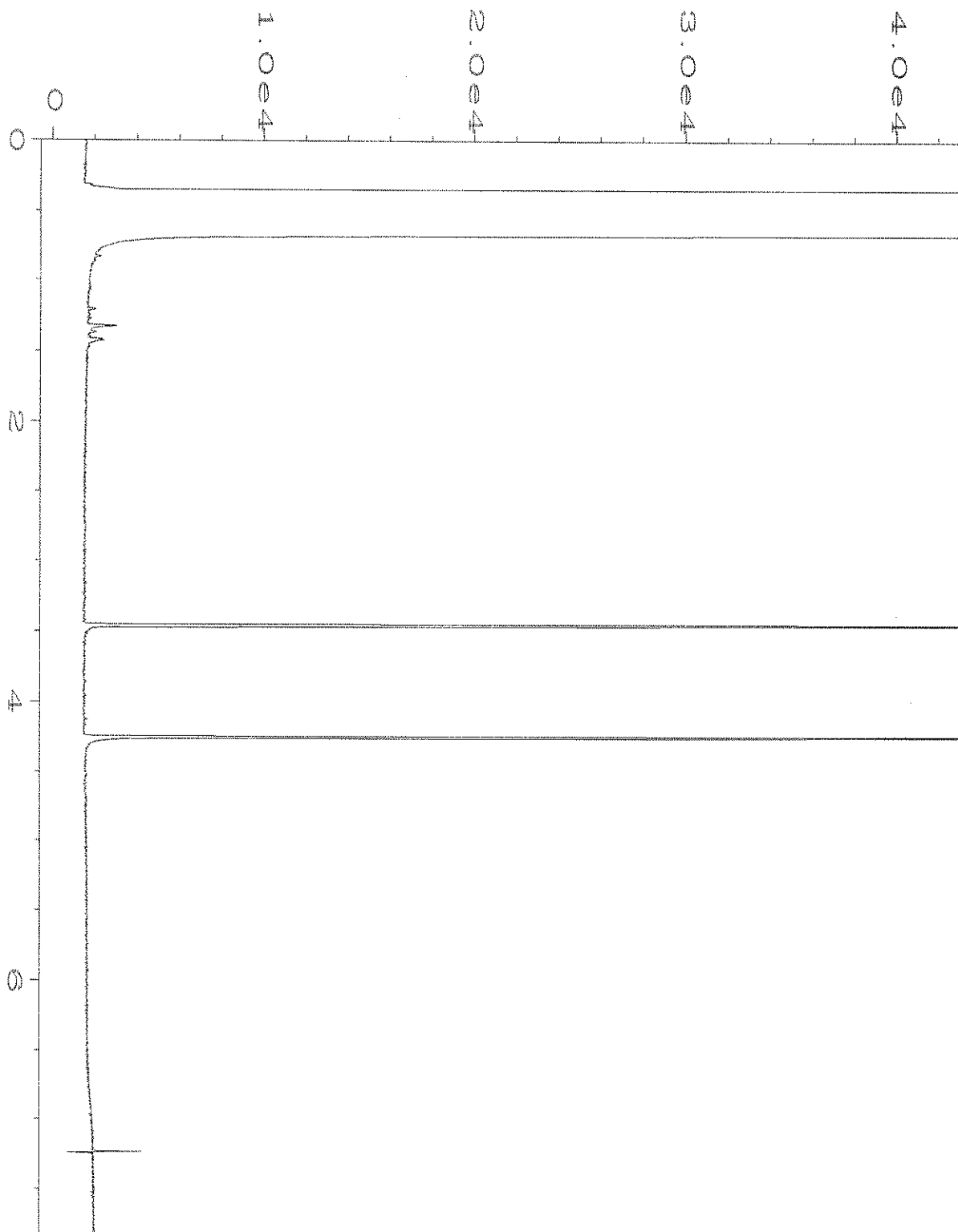
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\044F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 44
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-10	Sequence Line	: 7
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 07:00 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:49 AM		



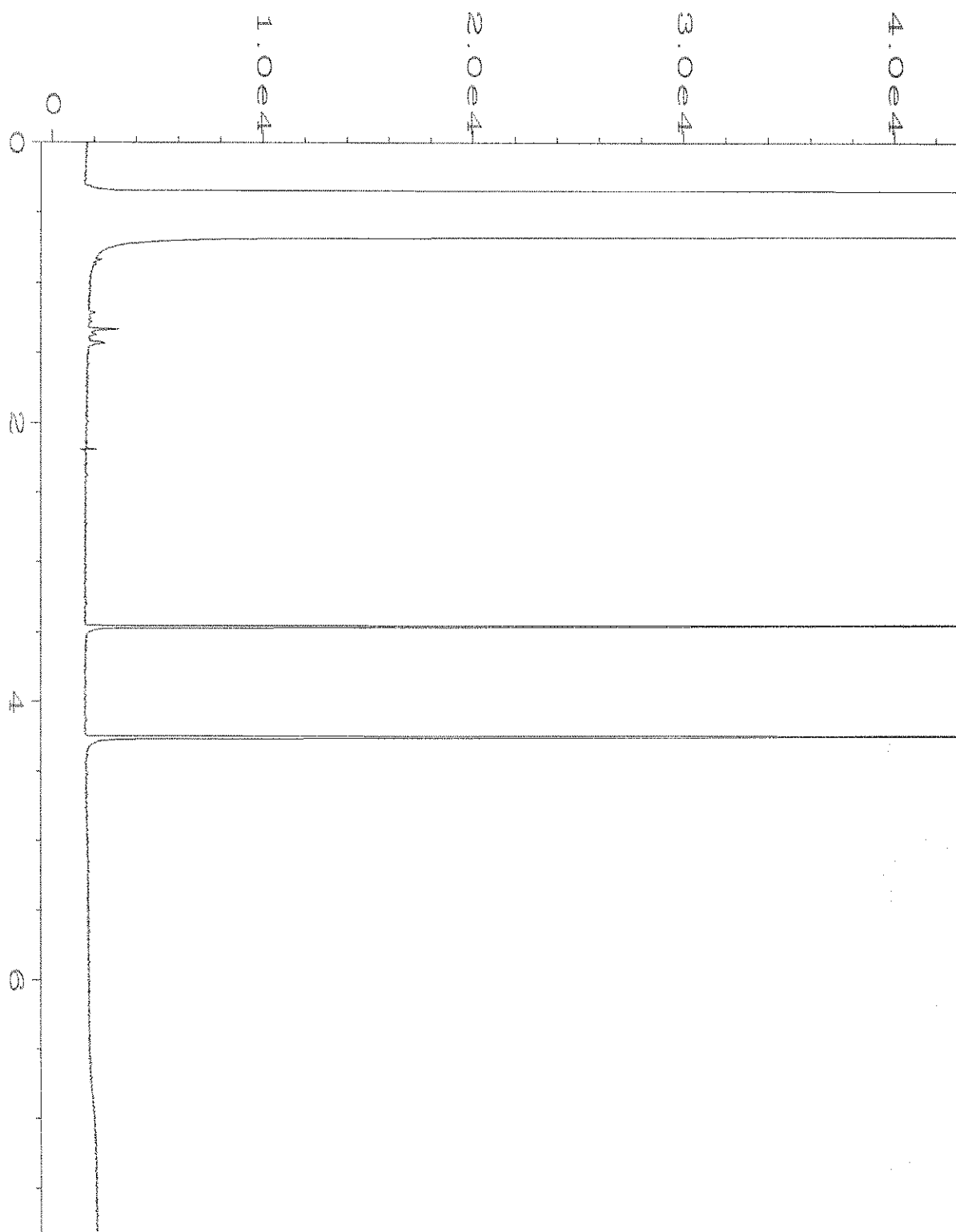
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\045F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 45
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-12	Sequence Line	: 7
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 07:12 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:50 AM		



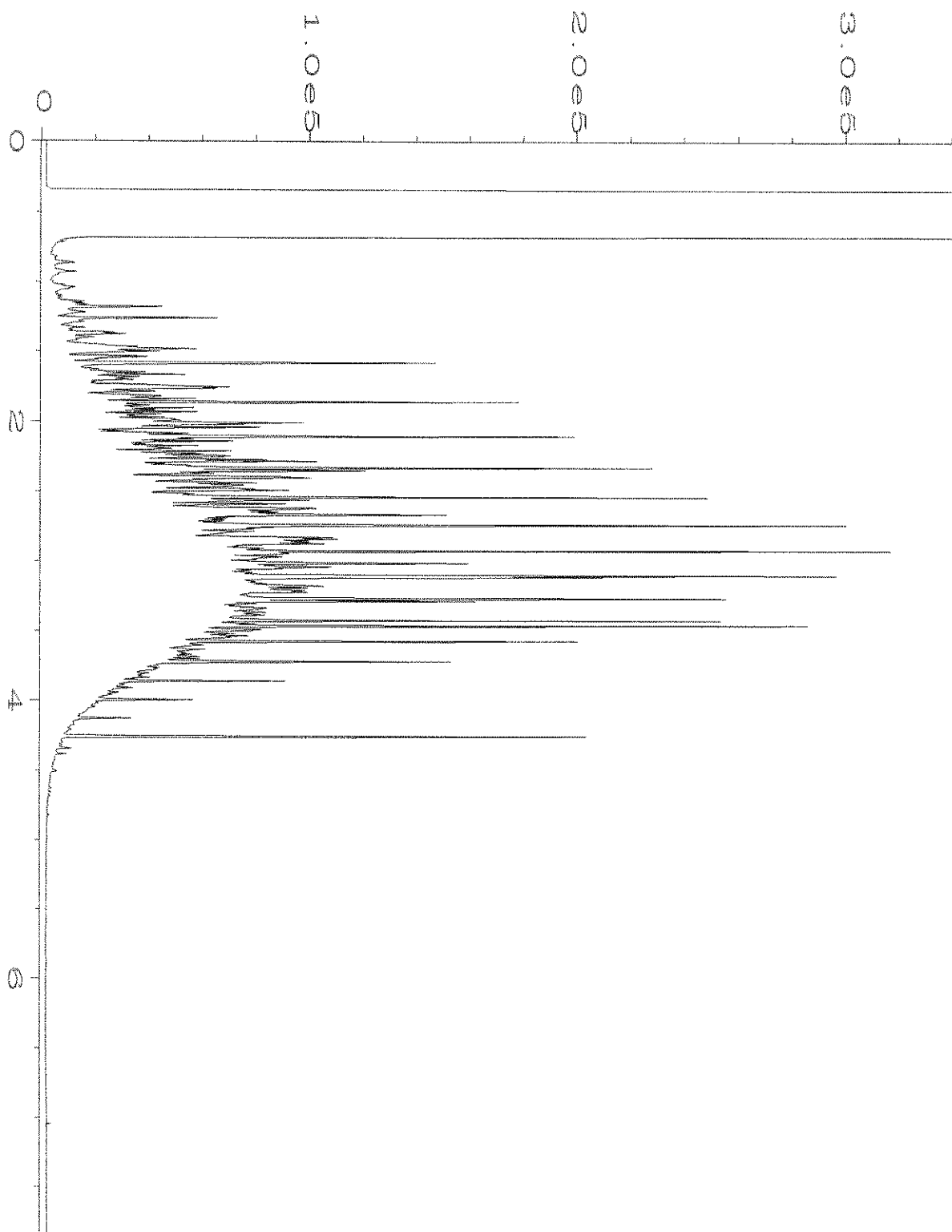
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\046F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 46
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-15	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 07:25 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:50 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\047F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 47
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011287-16	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 07:37 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:50 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\034F0701.D	Page Number	: 1
Operator	: TL	Vial Number	: 34
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 00-2577 mb	Sequence Line	: 7
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 04:55 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:50 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\005F0401.D	Page Number	: 1
Operator	: TL	Vial Number	: 5
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 1000 Dx 61-146C	Sequence Line	: 4
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 01:30 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:48 AM		

SAMPLE CHAIN OF CUSTODY ME 11/16/20 VS5/A04

011287

Report To Breyn Green Baxty Call

Company Aspect

Address _____

City, State, ZIP _____

Phone _____

Email bgreen@aspect

consulting, inc.

SAMPLERS (signature) RB Call

PROJECT NAME
Car Wash Entryway

PO #
080109

REMARKS

INVOICE TO

Page # 1 of 2

TURNAROUND TIME

☐ Standard turnaround
☐ RUSH
Rush charges authorized by: _____

SAMPLE DISPOSAL

☐ Archive samples
☒ Other Hold for 30 days
Default: Dispose after 30 days

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Notes
B-01-11	01	ARC 11/16/20	1315	50.1	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No analysis, hold 11/19/20
B-04-16.5	02		1320		1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-02-12	03		1055			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-02-16	04		1105			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-02-23	05		1105			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-03-12.5	06		1155			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-03-16	07		1200			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-03-22	08		1205			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-05-10	09		1405			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
B-05-16	10		1410			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Friedman & Bruya, Inc.

Relinquished by: RCM

Baxty Call

Aspect

11/16/20 1620

3012 16th Avenue West

Received by: 715700

HONG J. TAYLOR

FBI

✓

✓

Seattle, WA 98119-2029

Relinquished by:

Ph. (206) 285-8282

Received by:

Samples received at 3 °C

ME 4/2 11/16/2021 V33
4/204

Page # _____ of _____

☐ Standard turnaround

INVOICE TO

Project specific RLS? - Yes / No

☐ Standard turnaround
☐ RUSH _____
Rush charges authorized by: _____

SAMPLE DISPOSAL

☐ Archive samples
☒ Other 11/2 for 30 days
Default: Dispose after 30 days

ANALYSES REQUESTED

[illegible]

11/16/28	1620
----------	------

Samples received at 7 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 10, 2020

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the additional results from the testing of material submitted on November 16, 2020 from the Car Wash Enterprises PO 080107, F&BI 011287 project. There are 8 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Aspect Data, Baxter Call
ASP1210R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 16, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Car Wash Enterprises PO 080107, F&BI 011287 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
011287 -01	B-04-11
011287 -02	B-04-16.5
011287 -03	B-02-12
011287 -04	B-02-16
011287 -05	B-02-23
011287 -06	B-03-12.5
011287 -07	B-03-16
011287 -08	B-03-22
011287 -09	B-05-10
011287 -10	B-05-16
011287 -11	B-10-11
011287 -12	B-10-15
011287 -13	B-10-23
011287 -14	B-01-12
011287 -15	B-01-15
011287 -16	B-01-22

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B-04-11	Client:	Aspect Consulting, LLC
Date Received:	11/16/20	Project:	Car Wash Enterprises PO 080107
Date Extracted:	12/03/20	Lab ID:	011287-01 1/25
Date Analyzed:	12/03/20	Data File:	120314.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	67 d	32	100
Phenol-d6	72 d	46	107
Nitrobenzene-d5	78 d	24	127
2-Fluorobiphenyl	80 d	46	108
2,4,6-Tribromophenol	73 d	25	127
Terphenyl-d14	80 d	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.05
2-Methylnaphthalene	<0.05
1-Methylnaphthalene	<0.05
Acenaphthylene	<0.05
Acenaphthene	<0.05
Fluorene	<0.05
Phenanthrene	<0.05
Anthracene	<0.05
Fluoranthene	<0.05
Pyrene	<0.05
Benz(a)anthracene	<0.05
Chrysene	<0.05
Benzo(a)pyrene	<0.05
Benzo(b)fluoranthene	<0.05
Benzo(k)fluoranthene	<0.05
Indeno(1,2,3-cd)pyrene	<0.05
Dibenz(a,h)anthracene	<0.05
Benzo(g,h,i)perylene	<0.05

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises PO 080107
Date Extracted:	12/03/20	Lab ID:	00-2777 mb 1/5
Date Analyzed:	12/03/20	Data File:	120307.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	77	32	100
Phenol-d6	83	46	107
Nitrobenzene-d5	87	24	127
2-Fluorobiphenyl	89	46	108
2,4,6-Tribromophenol	81	25	127
Terphenyl-d14	90	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B-04-11	Client:	Aspect Consulting, LLC
Date Received:	11/16/20	Project:	Car Wash Enterprises PO 080107
Date Extracted:	12/04/20	Lab ID:	011287-01 1/6
Date Analyzed:	12/07/20	Data File:	120729.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	59	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises PO 080107
Date Extracted:	12/04/20	Lab ID:	00-2785 mb 1/6
Date Analyzed:	12/07/20	Data File:	120712.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	103	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/10/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080107, F&BI 011287

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 012048-01 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	<0.01	85	86	50-150	1
2-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	89	89	50-150	0
1-Methylnaphthalene	mg/kg (ppm)	0.83	<0.01	86	86	50-150	0
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	99	99	50-150	0
Acenaphthene	mg/kg (ppm)	0.83	<0.01	95	94	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	94	92	50-150	2
Phenanthrene	mg/kg (ppm)	0.83	0.057	90	87	50-150	3
Anthracene	mg/kg (ppm)	0.83	0.0089	90	92	50-150	2
Fluoranthene	mg/kg (ppm)	0.83	0.13	86	84	50-150	2
Pyrene	mg/kg (ppm)	0.83	0.18	79 b	77 b	50-150	3 b
Benz(a)anthracene	mg/kg (ppm)	0.83	0.082	89	87	50-150	2
Chrysene	mg/kg (ppm)	0.83	0.10	84	82	50-150	2
Benzo(a)pyrene	mg/kg (ppm)	0.83	0.13	88	85	50-150	3
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	0.14	91	90	50-150	1
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	0.048	94	92	50-150	2
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	0.088	95	83	50-150	13
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	0.019	100	91	50-150	9
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	0.094	88	77	50-150	13

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	90	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	91	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	88	70-130
Acenaphthylene	mg/kg (ppm)	0.83	103	70-130
Acenaphthene	mg/kg (ppm)	0.83	97	70-130
Fluorene	mg/kg (ppm)	0.83	95	70-130
Phenanthrene	mg/kg (ppm)	0.83	94	70-130
Anthracene	mg/kg (ppm)	0.83	94	70-130
Fluoranthene	mg/kg (ppm)	0.83	93	70-130
Pyrene	mg/kg (ppm)	0.83	99	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	94	70-130
Chrysene	mg/kg (ppm)	0.83	94	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	99	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	102	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	100	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	105	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	104	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	103	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/10/20

Date Received: 11/16/20

Project: Car Wash Enterprises PO 080107, F&BI 011287

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
POLYCHLORINATED BIPHENYLS AS
AROCLOR 1016/1260 BY EPA METHOD 8082A**

Laboratory Code: 012024-16 1/6 (Matrix Spike) 1/6

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	89	91	29-125	2
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	89	90	25-137	1

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	96	55-137
Aroclor 1260	mg/kg (ppm)	0.25	98	51-150

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

011287

Report No. Breen Green Baiter Call

SAMPLE CHAIN OF CUSTODY

ME 11/16/20 VS5/A04

Page # 1 of 2Company Aspet

Address _____

City, State, ZIP _____

Phone _____

Email bgreen@aspetcashting, ca

SAMPLERS (signature) <u>BS Call</u>		PROJECT NAME <u>Car Wash Enterprises</u>	PO # <u>080109</u>
REMARKS		INVOICE TO	

TURNAROUND TIME	
<input type="checkbox"/> Standard turnaround	<input type="checkbox"/> RUSH
Rush charges authorized by: _____	
SAMPLE DISPOSAL	
<input type="checkbox"/> Archive samples	
<input checked="" type="checkbox"/> Other <u>PAV by 30 days</u>	
Default: Dispose after 30 days	

ANALYSES REQUESTED						
Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	
B-01-11	01 A-6	11/16/26	1315	50.1	5	
B-04-16.5	02		1320			
B-02-12	03		1055			
B-02-16	04		1106			
B-02-23	05		1105			
B-03-12.5	06		1155			
B-03-16	07		1200			
B-03-22	08		1205			
B-05-10	09		1405			
B-05-16	10	9	1410			

SIGNATURE

PRINT NAME

COMPANY

DATE TIME

Relinquished by: BSMBaiter CallAspet11/16/20 1620

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Received by:

7157002HOOGSTRAALEBR✓ ✓

Relinquished by:

7157002HOOGSTRAALEBR✓ ✓

Received by:

7157002HOOGSTRAALEBR✓ ✓Samples received at 2 °C

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 1, 2020

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on November 17, 2020 from the Car Wash Enterprises PO 080109, F&BI 011310 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures

c: Aspect Data, Baxter Call
ASP1201R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 17, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Car Wash Enterprises PO 080109, F&BI 011310 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
011310 -01	B12-11.5
011310 -02	B12-16
011310 -03	B13-11
011310 -04	B13-17.5
011310 -05	B13-21
011310 -06	B11-7
011310 -07	B11-11.5
011310 -08	B11-16
011310 -09	B11-22
011310 -10	B08-11
011310 -11	B08-17
011310 -12	B08-21
011310 -13	B09-12
011310 -14	B09-17.5
011310 -15	B09-21

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

Date Extracted: 11/24/20

Date Analyzed: 11/25/20 and 11/30/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND TPH AS GASOLINE
USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B12-11.5 011310-01	<0.02	<0.02	<0.02	<0.06	<5	81
B12-16 011310-02	<0.02	<0.02	<0.02	<0.06	<5	92
B13-17.5 011310-04	<0.02	<0.02	<0.02	<0.06	<5	91
B11-11.5 011310-07	<0.02	<0.02	<0.02	<0.06	31	90
B08-17 011310-11 1/5	<0.02 j	4.1	0.33	0.94	260	95
B08-21 011310-12	<0.02	<0.02	<0.02	<0.06	<5	90
B09-17.5 011310-14	<0.02	0.23	0.027	0.22	29	98
Method Blank 00-2425 MB2	<0.02	<0.02	<0.02	<0.06	<5	90

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

Date Extracted: 11/23/20

Date Analyzed: 11/23/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
B12-11.5 011310-01	<50	<250	97
B12-16 011310-02	<50	<250	97
B13-17.5 011310-04	<50	<250	93
B11-11.5 011310-07	<50	<250	99
B08-17 011310-11	86 x	<250	93
B08-21 011310-12	<50	<250	93
B09-17.5 011310-14	<50	<250	95
Method Blank 00-2582 MB	<50	<250	98

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	B08-17	Client:	Aspect Consulting, LLC
Date Received:	11/17/20	Project:	Car Wash Enterprises
Date Extracted:	11/20/20	Lab ID:	011310-11 1/5
Date Analyzed:	11/20/20	Data File:	112008.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	74	32	100
Phenol-d6	81	46	107
Nitrobenzene-d5	82	24	127
2-Fluorobiphenyl	82	46	108
2,4,6-Tribromophenol	84	25	127
Terphenyl-d14	81	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	0.26
2-Methylnaphthalene	0.53
1-Methylnaphthalene	0.38
Acenaphthylene	<0.01
Acenaphthene	0.011
Fluorene	<0.01
Phenanthrene	0.019
Anthracene	0.014
Fluoranthene	<0.01
Pyrene	0.011
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Semivolatile Compounds By EPA Method 8270E

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises
Date Extracted:	11/20/20	Lab ID:	00-2570 mb 1/5
Date Analyzed:	11/20/20	Data File:	112005.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
2-Fluorophenol	83	32	100
Phenol-d6	88	46	107
Nitrobenzene-d5	91	24	127
2-Fluorobiphenyl	94	46	108
2,4,6-Tribromophenol	81	25	127
Terphenyl-d14	92	50	150

Compounds:	Concentration mg/kg (ppm)
Naphthalene	<0.01
2-Methylnaphthalene	<0.01
1-Methylnaphthalene	<0.01
Acenaphthylene	<0.01
Acenaphthene	<0.01
Fluorene	<0.01
Phenanthrene	<0.01
Anthracene	<0.01
Fluoranthene	<0.01
Pyrene	<0.01
Benz(a)anthracene	<0.01
Chrysene	<0.01
Benzo(a)pyrene	<0.01
Benzo(b)fluoranthene	<0.01
Benzo(k)fluoranthene	<0.01
Indeno(1,2,3-cd)pyrene	<0.01
Dibenz(a,h)anthracene	<0.01
Benzo(g,h,i)perylene	<0.01

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	B08-17	Client:	Aspect Consulting, LLC
Date Received:	11/17/20	Project:	Car Wash Enterprises
Date Extracted:	11/20/20	Lab ID:	011310-11 1/6
Date Analyzed:	11/20/20	Data File:	112012.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	76	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	Aspect Consulting, LLC
Date Received:	Not Applicable	Project:	Car Wash Enterprises
Date Extracted:	11/20/20	Lab ID:	00-2571 mb 1/6
Date Analyzed:	11/20/20	Data File:	112003.D
Matrix:	Soil	Instrument:	GC7
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	103	23	127

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING METHOD 8021B AND NWTPH-G_x**

Laboratory Code: 011406-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent	
			Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	91	69-120
Toluene	mg/kg (ppm)	0.5	93	70-117
Ethylbenzene	mg/kg (ppm)	0.5	95	65-123
Xylenes	mg/kg (ppm)	1.5	93	66-120
Gasoline	mg/kg (ppm)	20	95	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: 011392-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	88	98	73-135	11

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	94	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR SEMIVOLATILES BY EPA METHOD 8270E

Laboratory Code: 011310-11 1/5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Naphthalene	mg/kg (ppm)	0.83	0.25	66 b	66 b	50-150	0 b
2-Methylnaphthalene	mg/kg (ppm)	0.83	0.50	47 b	49 b	50-150	4 b
1-Methylnaphthalene	mg/kg (ppm)	0.83	0.36	56 b	58 b	50-150	4 b
Acenaphthylene	mg/kg (ppm)	0.83	<0.01	93	96	50-150	3
Acenaphthene	mg/kg (ppm)	0.83	0.010	89	90	50-150	1
Fluorene	mg/kg (ppm)	0.83	<0.01	88	91	50-150	3
Phenanthrene	mg/kg (ppm)	0.83	0.018	85	88	50-150	3
Anthracene	mg/kg (ppm)	0.83	0.013	85	87	50-150	2
Fluoranthene	mg/kg (ppm)	0.83	<0.01	87	90	50-150	3
Pyrene	mg/kg (ppm)	0.83	0.010	85	88	50-150	3
Benz(a)anthracene	mg/kg (ppm)	0.83	<0.01	86	90	50-150	5
Chrysene	mg/kg (ppm)	0.83	<0.01	86	90	50-150	5
Benzo(a)pyrene	mg/kg (ppm)	0.83	<0.01	92	94	50-150	2
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	<0.01	94	99	50-150	5
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	<0.01	94	93	50-150	1
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	<0.01	91	93	50-150	2
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	<0.01	93	96	50-150	3
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	<0.01	85	87	50-150	2

Laboratory Code: Laboratory Control Sample 1/5

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Naphthalene	mg/kg (ppm)	0.83	84	58-108
2-Methylnaphthalene	mg/kg (ppm)	0.83	86	70-130
1-Methylnaphthalene	mg/kg (ppm)	0.83	83	70-130
Acenaphthylene	mg/kg (ppm)	0.83	93	70-130
Acenaphthene	mg/kg (ppm)	0.83	89	70-130
Fluorene	mg/kg (ppm)	0.83	87	70-130
Phenanthrene	mg/kg (ppm)	0.83	86	70-130
Anthracene	mg/kg (ppm)	0.83	85	70-130
Fluoranthene	mg/kg (ppm)	0.83	84	70-130
Pyrene	mg/kg (ppm)	0.83	86	70-130
Benz(a)anthracene	mg/kg (ppm)	0.83	86	70-130
Chrysene	mg/kg (ppm)	0.83	87	70-130
Benzo(a)pyrene	mg/kg (ppm)	0.83	90	70-130
Benzo(b)fluoranthene	mg/kg (ppm)	0.83	93	70-130
Benzo(k)fluoranthene	mg/kg (ppm)	0.83	94	70-130
Indeno(1,2,3-cd)pyrene	mg/kg (ppm)	0.83	95	70-130
Dibenz(a,h)anthracene	mg/kg (ppm)	0.83	93	70-130
Benzo(g,h,i)perylene	mg/kg (ppm)	0.83	90	70-130

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/01/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF SOIL SAMPLES FOR
POLYCHLORINATED BIPHENYLS AS
AROCLOR 1016/1260 BY EPA METHOD 8082A**

Laboratory Code: 011370-03 1/6 (Matrix Spike) 1/6

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Control Limits	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.25	<0.02	79	74	29-125	7
Aroclor 1260	mg/kg (ppm)	0.25	<0.02	87	79	25-137	10

Laboratory Code: Laboratory Control Sample 1/6

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Aroclor 1016	mg/kg (ppm)	0.25	96	55-137
Aroclor 1260	mg/kg (ppm)	0.25	100	51-150

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

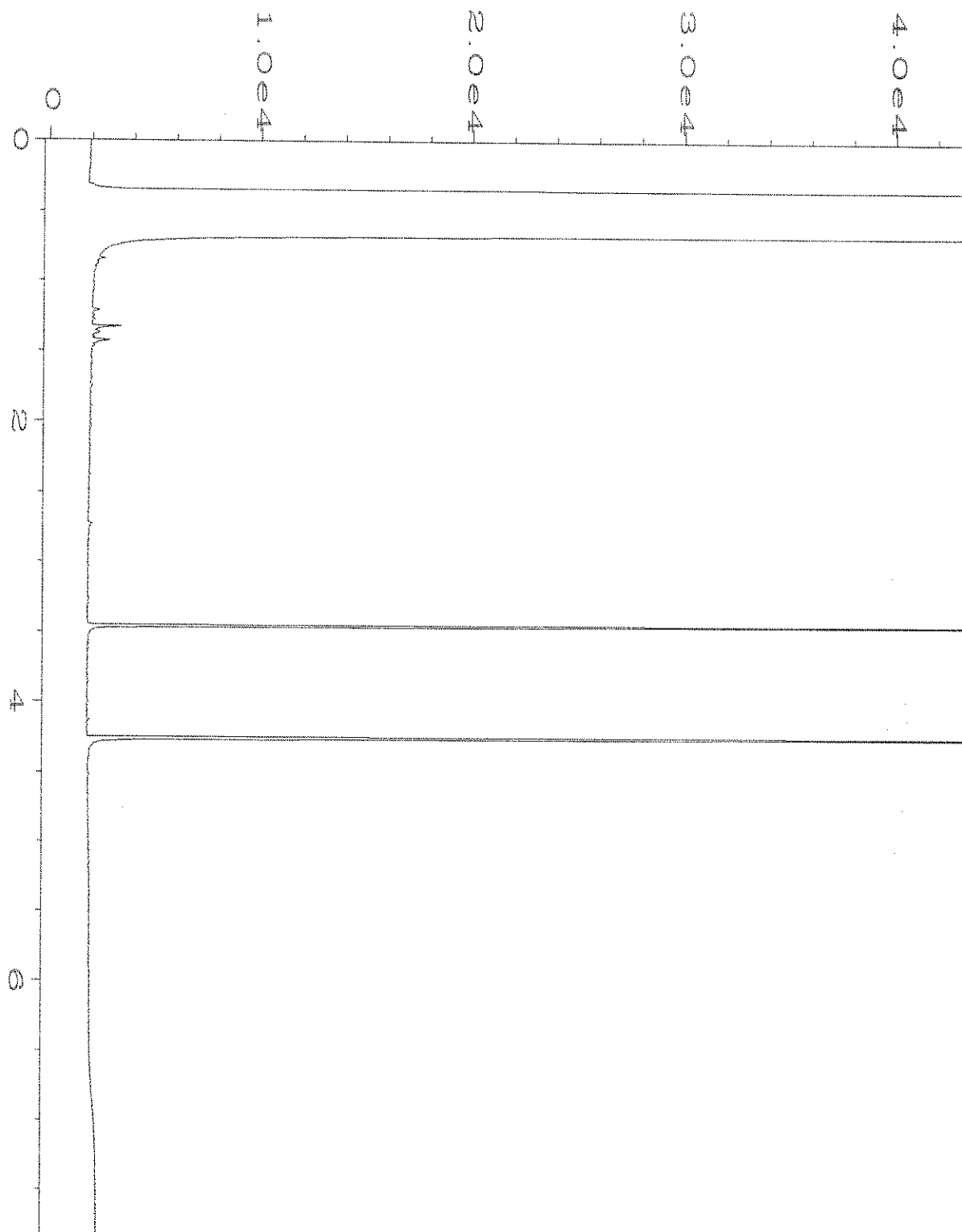
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

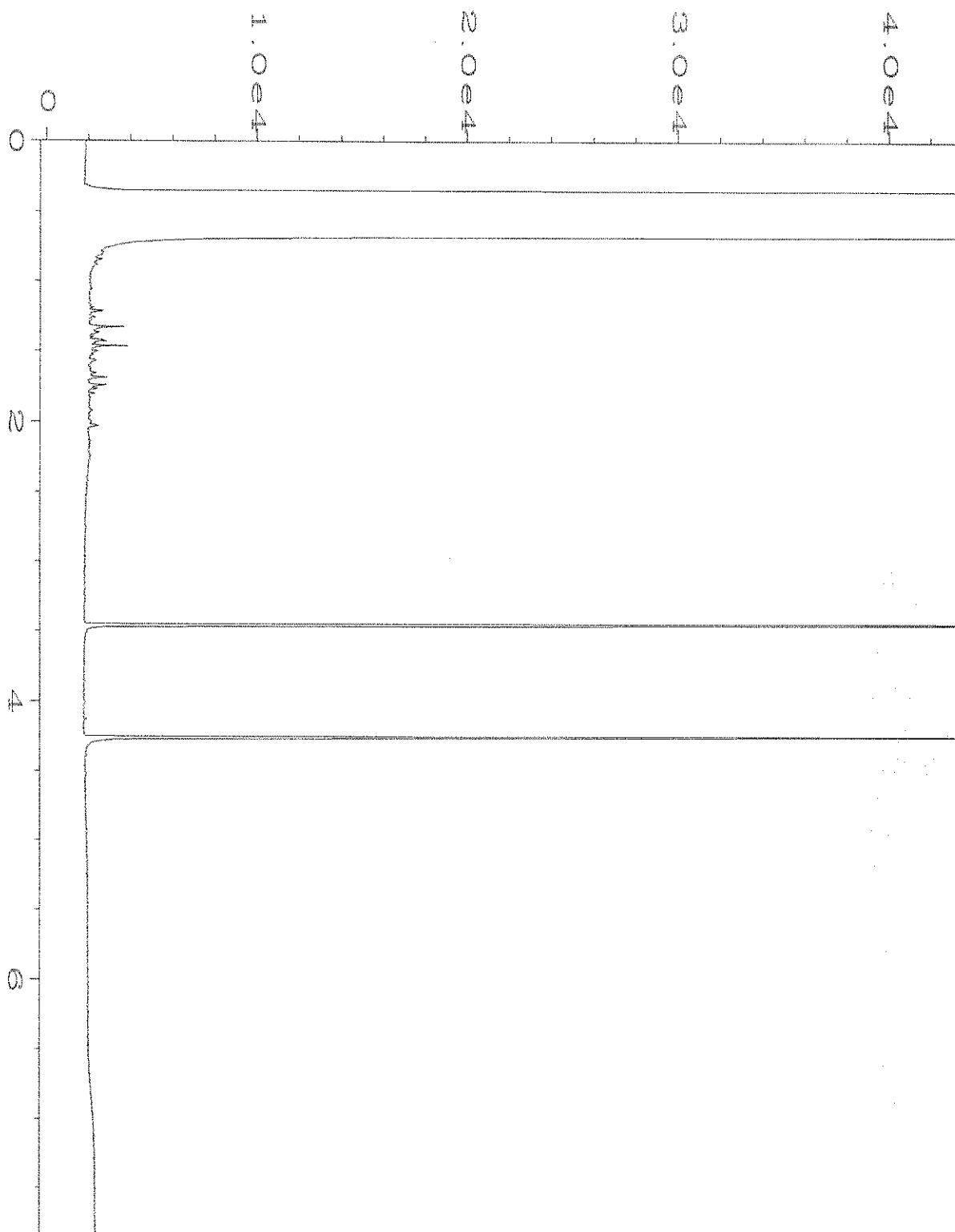
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

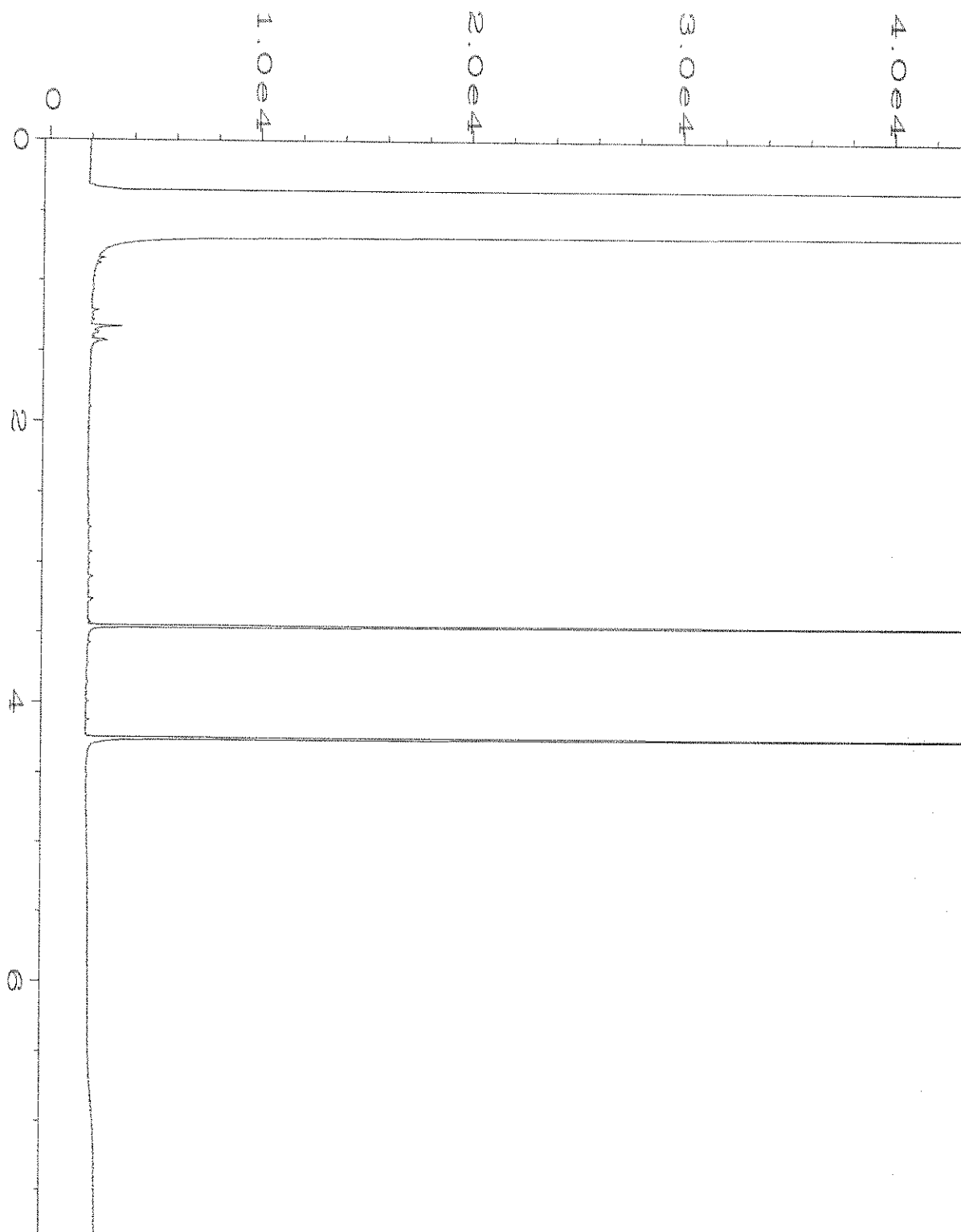
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



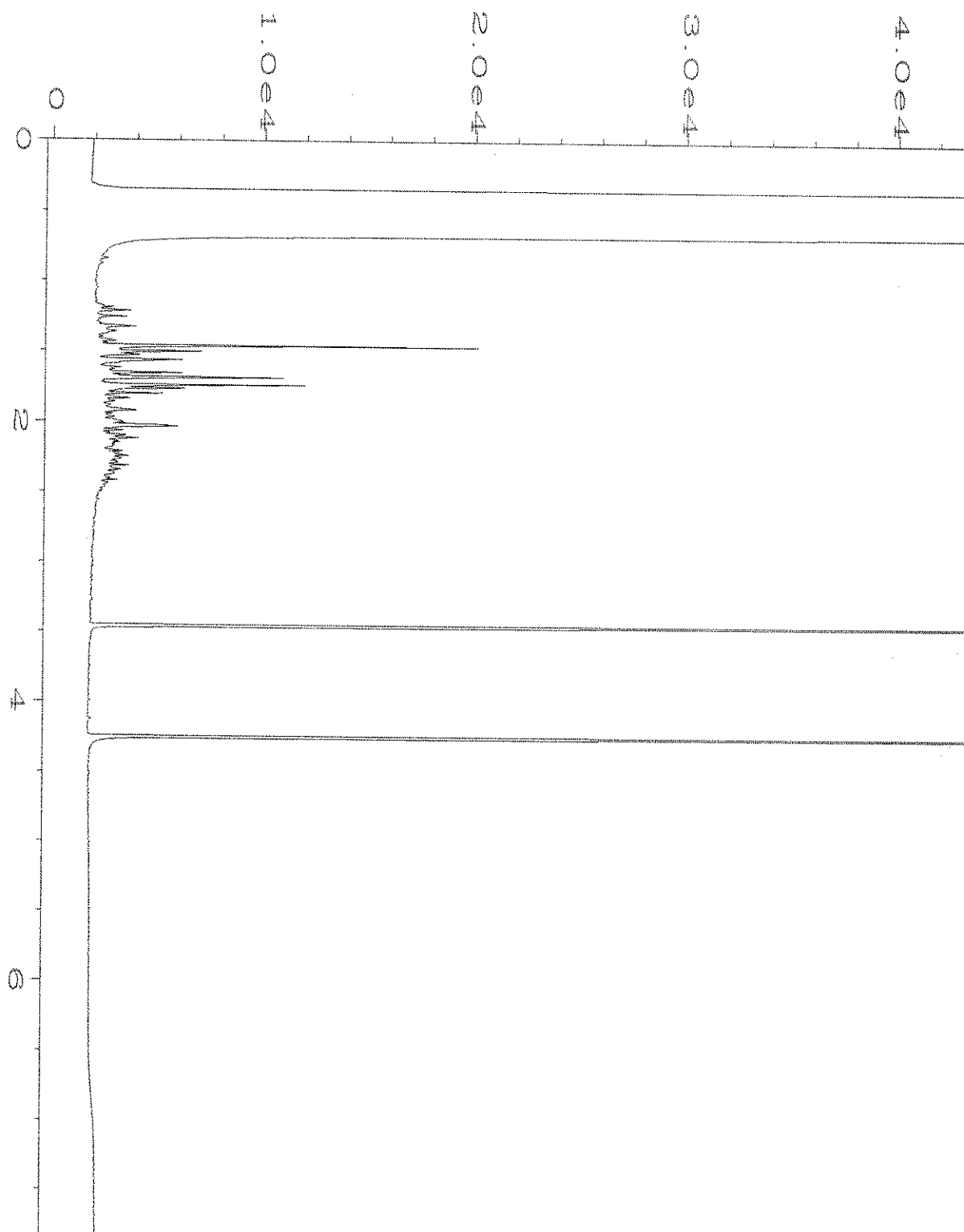
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\023F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 23
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-01	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 23 Nov 20 11:41 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:58 AM		



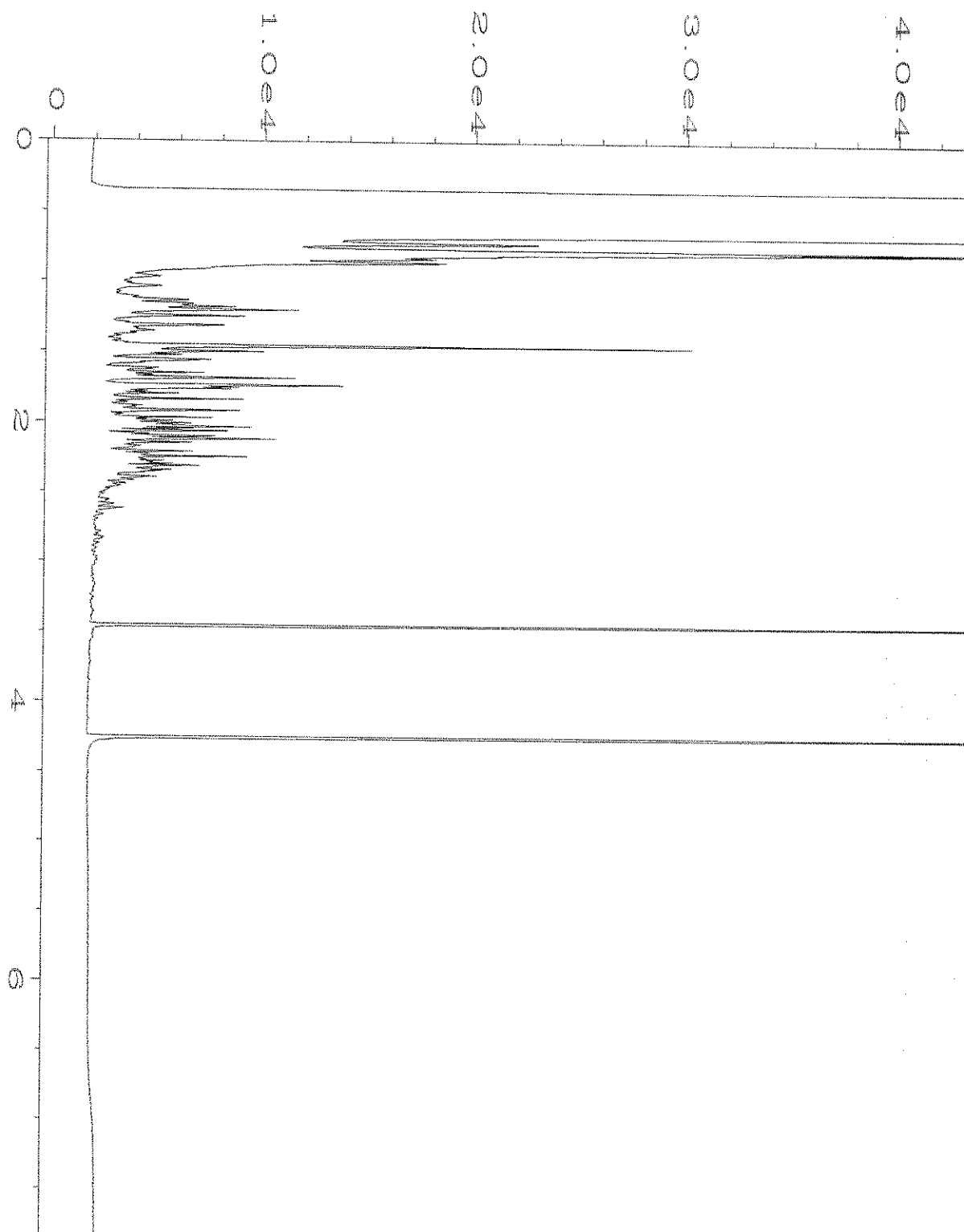
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\024F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 24
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-02	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 23 Nov 20 11:54 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	: 24 Nov 20 08:58 AM		



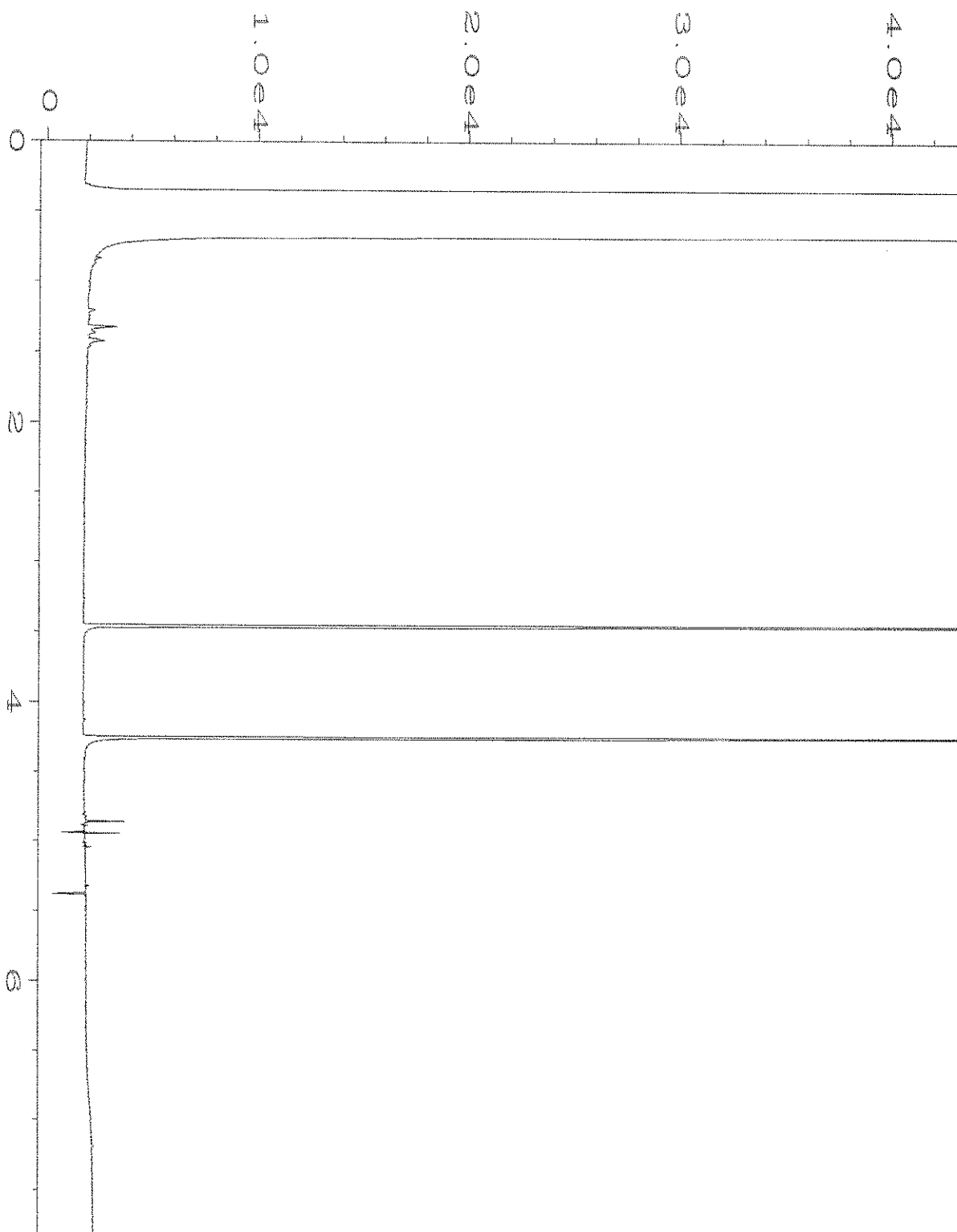
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\025F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 25
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-04	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 23 Nov 20 12:06 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:58 AM		



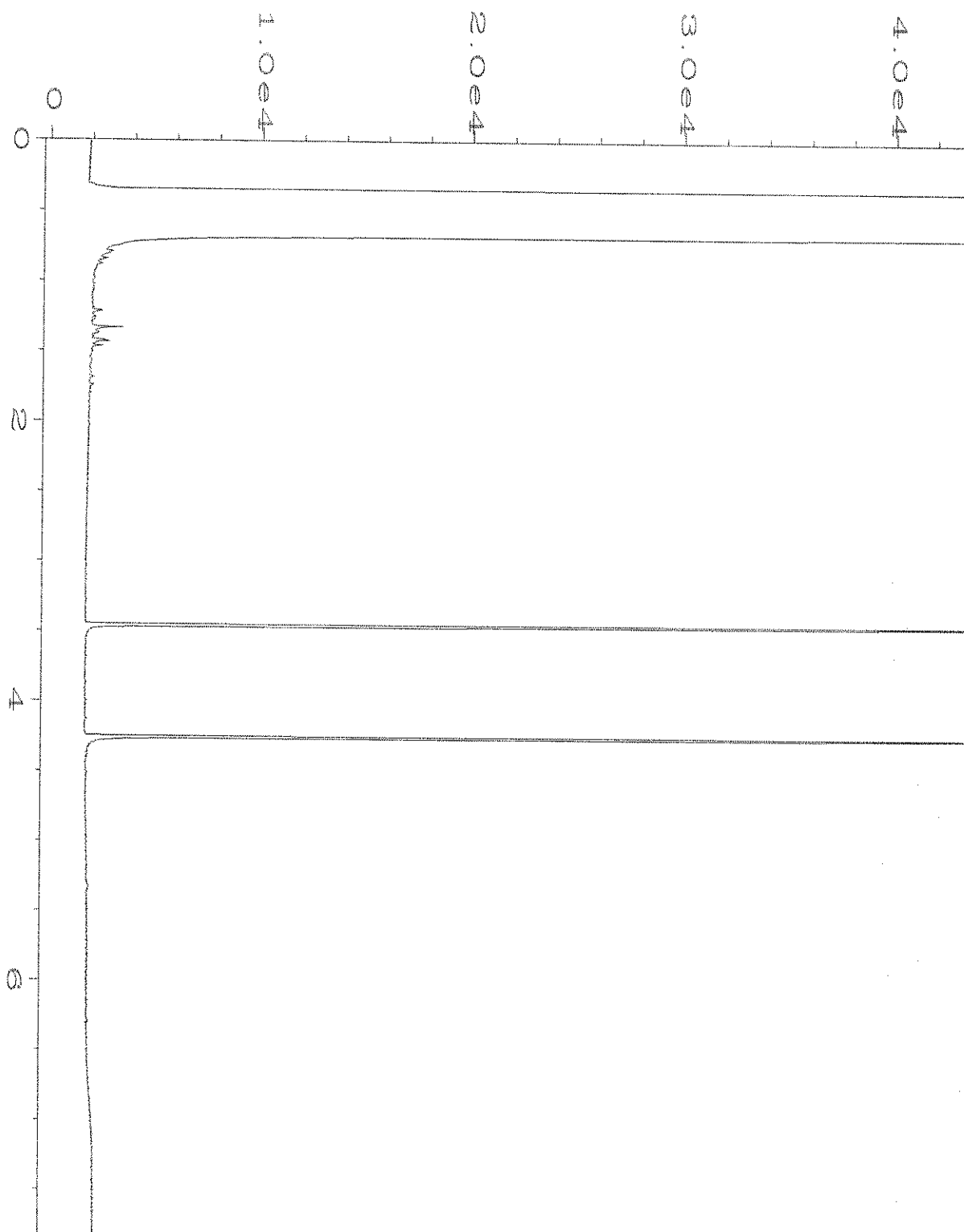
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\026F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 26
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-07	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 23 Nov 20 12:19 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:59 AM		



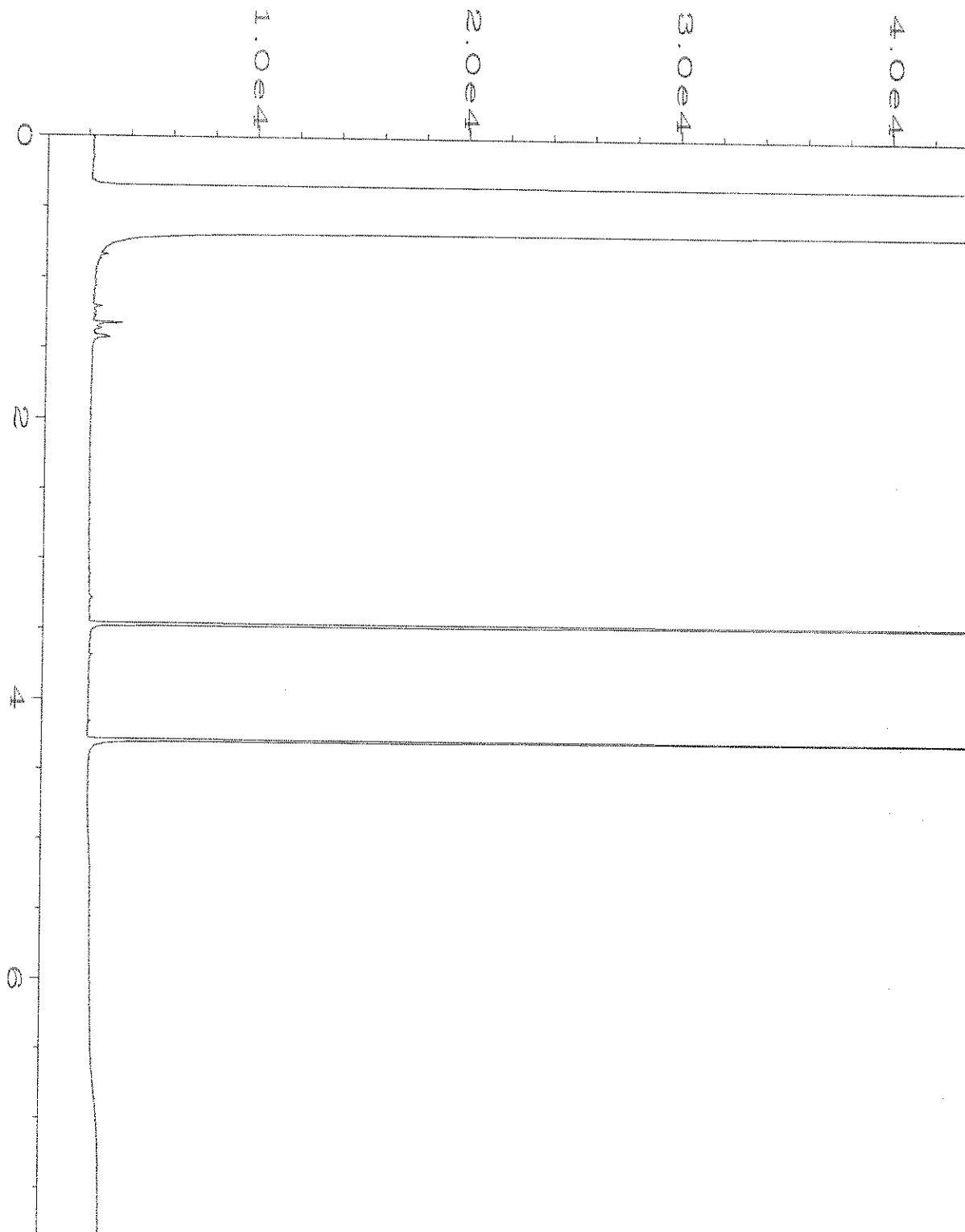
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\027F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 27
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-11	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 23 Nov 20 12:31 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:59 AM		



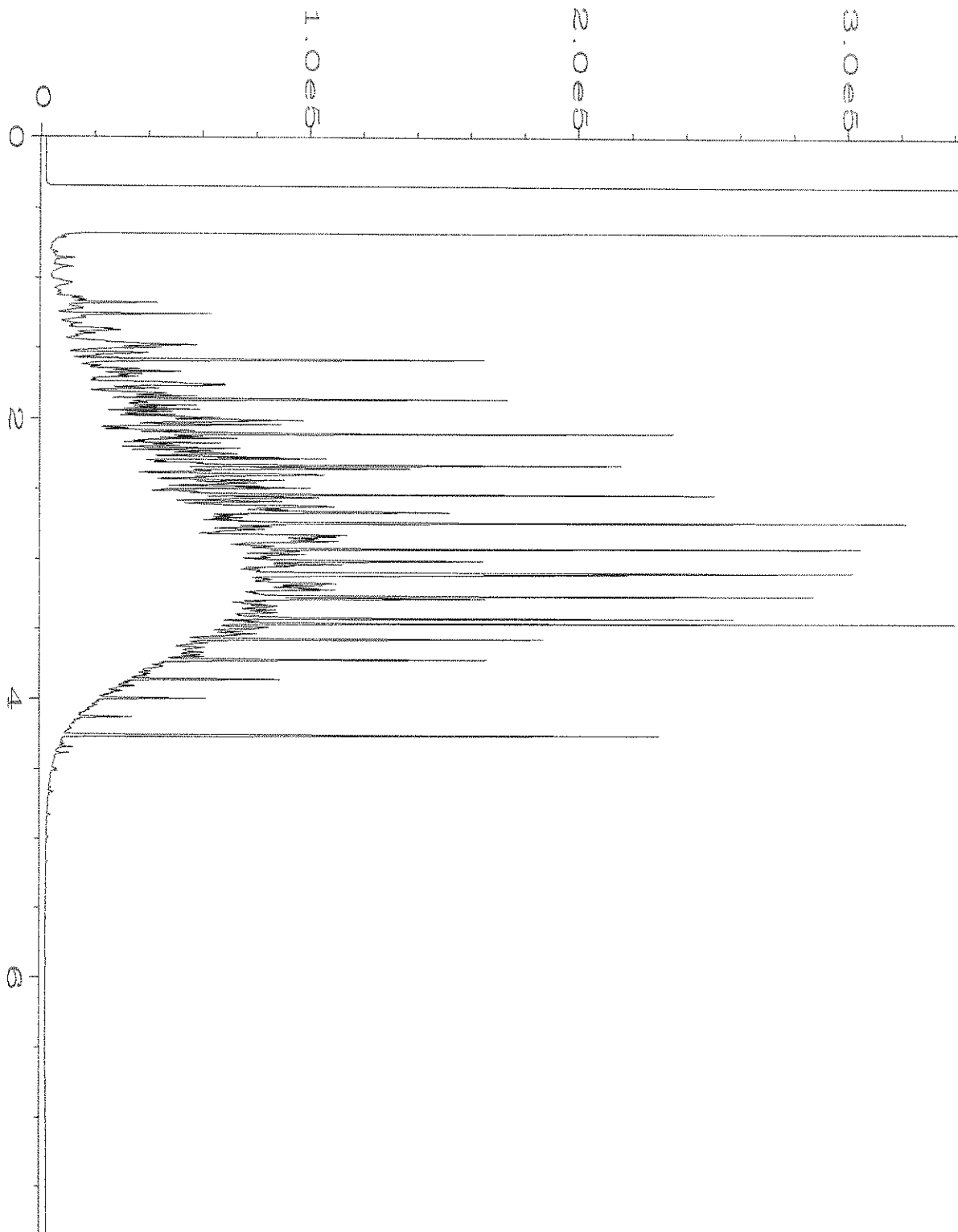
Data File Name	: C:\HPCHEM\4\DATA\11-23-20\028F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 28
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-12	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 23 Nov 20 12:44 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:59 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-23-20\029F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 29
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011310-14	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 23 Nov 20 12:56 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 08:59 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-23-20\006F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 6
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 00-2582 mb	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 23 Nov 20 08:11 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	: 24 Nov 20 08:59 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-23-20\005F0401.D	Page Number	: 1
Operator	: TL	Vial Number	: 5
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 1000 Dx 61-146C	Sequence Line	: 4
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 23 Nov 20 01:35 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	24 Nov 20 09:00 AM		

011310

SAMPLE CHAIN OF CUSTODY

11-17-20

VSS/BQY

Page # 1 of 2

Report To Breyer Green, Baxter CellCompany Aspet Consulting

Address _____

City, State, ZIP _____

Phone _____

Email breyer@aspet consulting.comSAMPLERS (signature) B Cell

PROJECT NAME

Car Wash Enterprises

PO #

080109

REMARKS

INVOICE TO

Project specific RI? - Yes / No

TURNAROUND TIME	
<input type="checkbox"/> Standard turnaround	SAMPLE DISPOSAL
<input type="checkbox"/> RUSH	
Rush charges authorized by: _____	
<input type="checkbox"/> Archiving samples	
<input checked="" type="checkbox"/> Other <u>held for 30 days</u>	
Default: Dispose after 30 days	

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Notes
B-12-11.5	01 A-E	11/17/20	1005	Soil	5	(X)	(X)	(X)					Hold
B-12-16	02		1010			(X)	(X)	(X)					
B-13-11	03		1140										
B-13-17.5	04		1145			(X)	(X)	(X)					
B-13-21	05		1150										
B-11-7	06		1045										
B-11-11.5	07		1058			(X)	(X)	(X)					
B-11-16	08		1055										
B-11-22	09		1100										
B-08-11	10		1336										

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Friedman & Bruyno, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Relinquished by: B CellBaxter CellAspet11/17/201530Received by: UdaVINHFB111/17/201530

Relinquished by: _____

Received by: _____

Samples received at 400

1557 Body

2

Phone _____ Email _____

TURNAROUND TIME	<input type="checkbox"/> Standard turnaround <input type="checkbox"/> RUSH _____ Rush charges authorized by: _____
SAMPLE DISPOSAL	<input type="checkbox"/> Archive samples <input checked="" type="checkbox"/> Other <i>Hold for 30 days</i> Default: Dispose after 30 days

[illegible]

Ph. (206) 285-8282

DATE	TIME
------	------

11/17/28	1536
----------	------

11/17/20	153
----------	-----

Samples received at:	400
----------------------	-----

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

December 8, 2020

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the additional results from the testing of material submitted on November 17, 2020 from the Car Wash Enterprises PO 080109, F&BI 011310 project. There are 6 pages included in this report.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Aspect Data
ASP1208R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 17, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Car Wash Enterprises PO 080109, F&BI 011310 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
011310 -01	B12-11.5
011310 -02	B12-16
011310 -03	B13-11
011310 -04	B13-17.5
011310 -05	B13-21
011310 -06	B11-7
011310 -07	B11-11.5
011310 -08	B11-16
011310 -09	B11-22
011310 -10	B08-11
011310 -11	B08-17
011310 -12	B08-21
011310 -13	B09-12
011310 -14	B09-17.5
011310 -15	B09-21

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/08/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

Date Extracted: 12/03/20

Date Analyzed: 12/04/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND TPH AS GASOLINE
USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B11-16 011310-08	<0.02	<0.02	<0.02	<0.06	6.4	81
B09-21 011310-15	<0.02	<0.02	<0.02	<0.06	<5	83
Method Blank 00-2599 MB	<0.02	<0.02	<0.02	<0.06	<5	82

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/08/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

Date Extracted: 12/03/20

Date Analyzed: 12/03/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-D_x**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 56-165)
B11-16 011310-08	<50	<250	86
B09-21 011310-15	<50	<250	85
Method Blank 00-2747 MB2	<50	<250	87

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/08/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 012045-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	10	13	26 a

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	88	70-117
Ethylbenzene	mg/kg (ppm)	0.5	90	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	90	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 12/08/20

Date Received: 11/17/20

Project: Car Wash Enterprises PO 080109, F&BI 011310

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: 012016-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	83	95	101	73-135	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	96	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

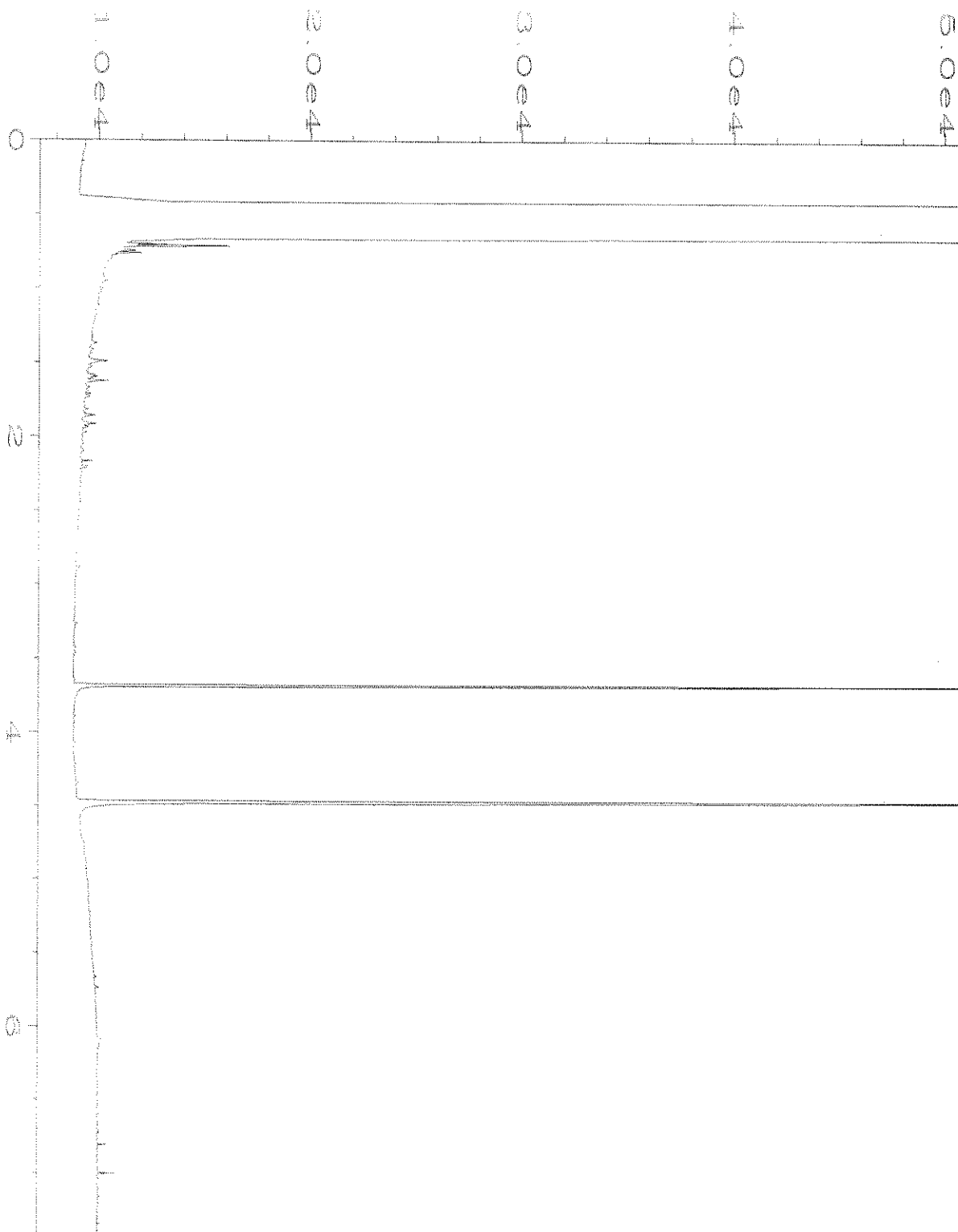
nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

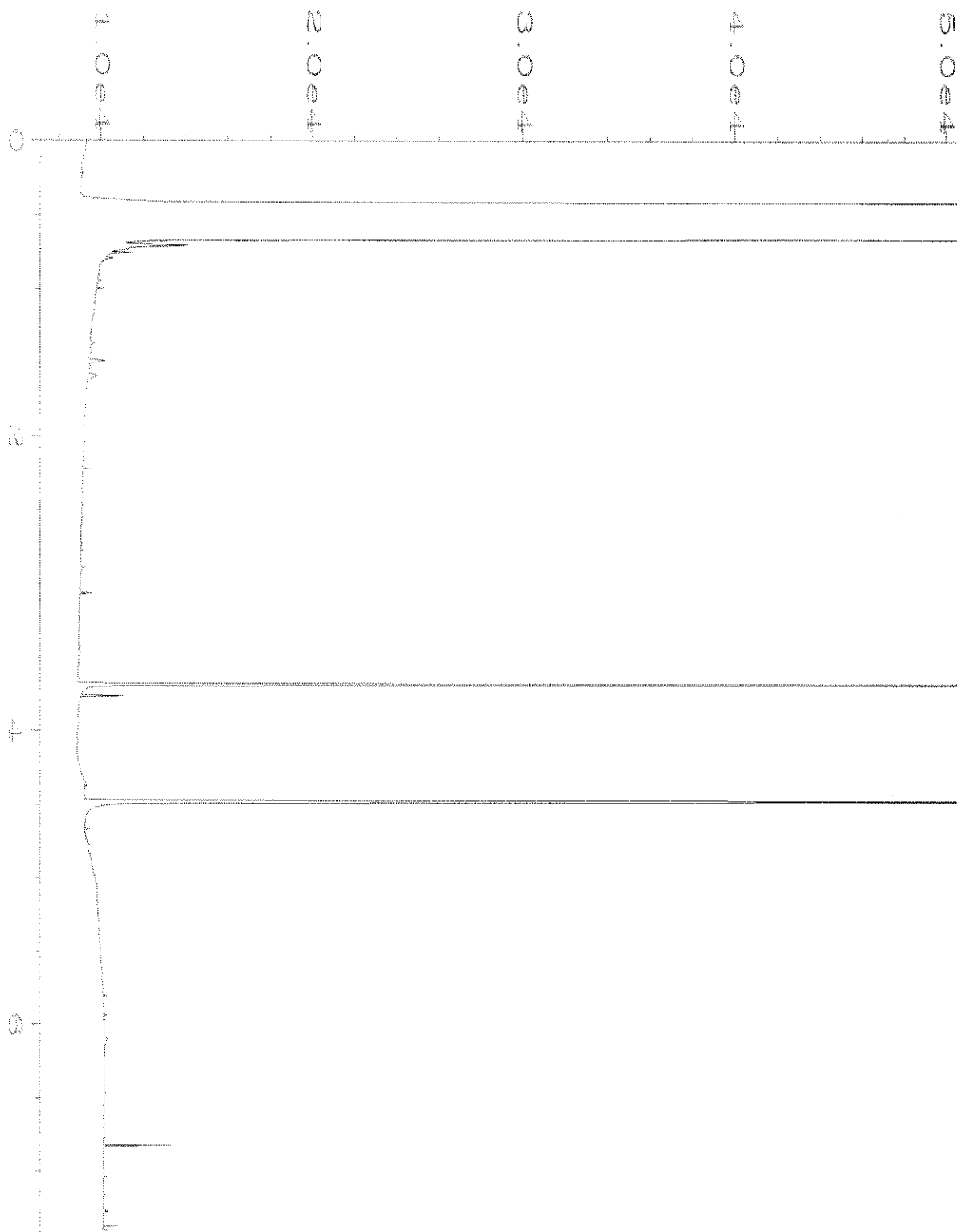
ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

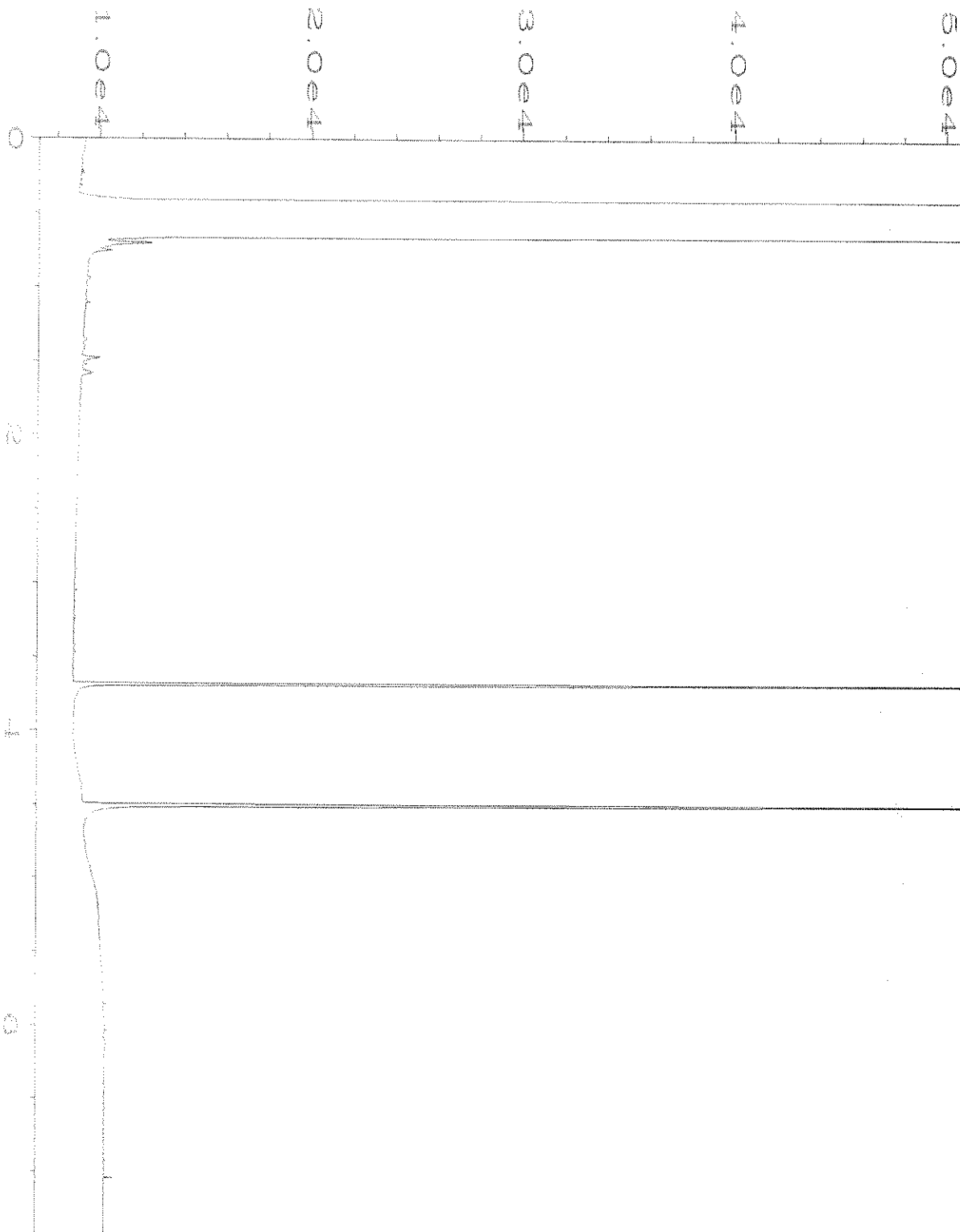
x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.



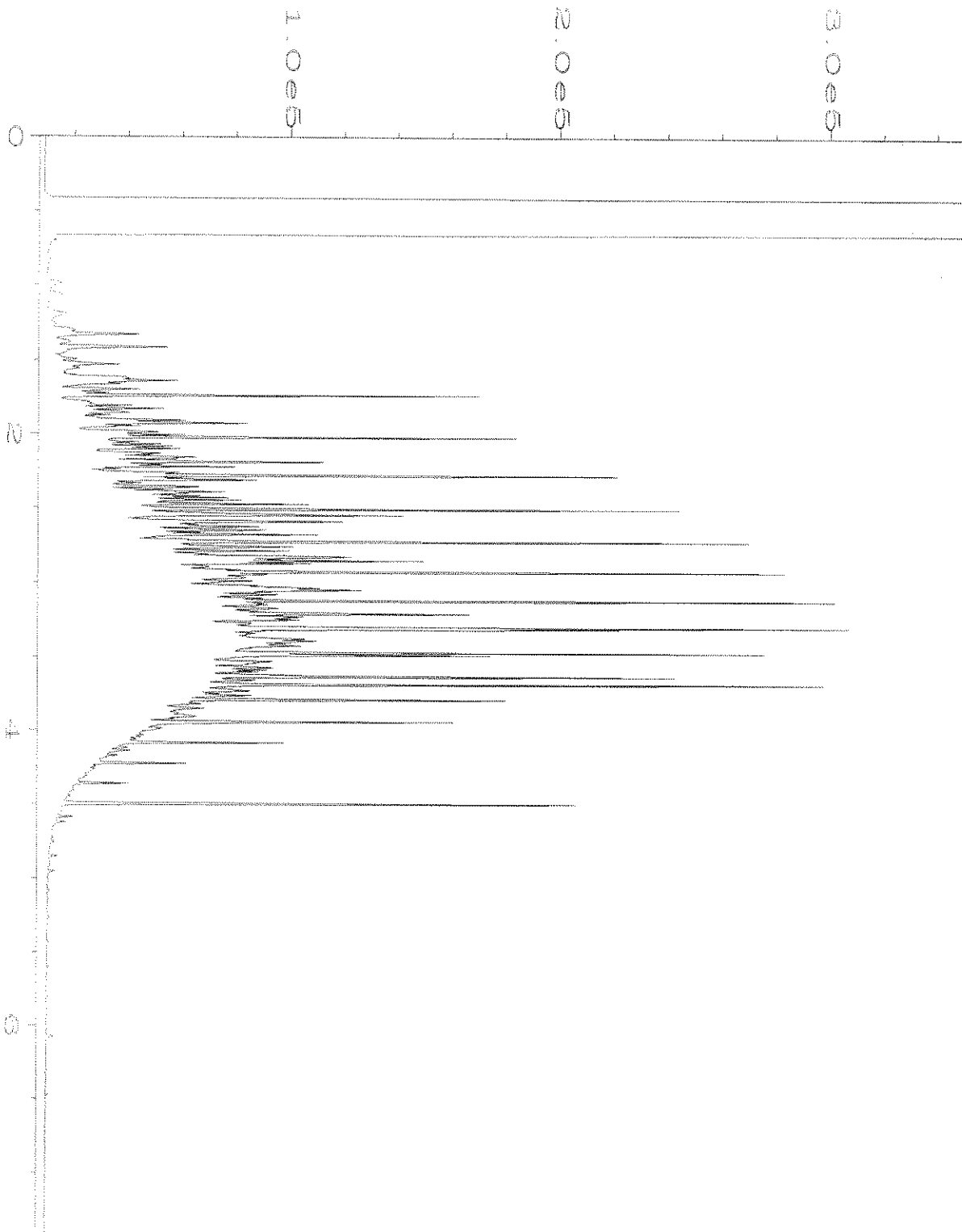
Data File Name	: C:\HPCHEM\1\DATA\12-03-20\020F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 20
Instrument	: GC1	Injection Number	: 1
Sample Name	: 011310-08	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 03 Dec 20 10:37 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	04 Dec 20 08:13 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-03-20\021F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 21
Instrument	: GC1	Injection Number	: 1
Sample Name	: 011310-15	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 03 Dec 20 10:48 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	04 Dec 20 08:13 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-03-20\012F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 12
Instrument	: GC1	Injection Number	: 1
Sample Name	: 00-2747 mb2	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 03 Dec 20 07:42 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	04 Dec 20 08:14 AM		



Data File Name	: C:\HPCHEM\1\DATA\12-03-20\005F0601.D	Page Number	: 1
Operator	: TL	Vial Number	: 5
Instrument	: GC1	Injection Number	: 1
Sample Name	: 1000 Dx 61-146H	Sequence Line	: 6
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 03 Dec 20 01:57 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	: 04 Dec 20 08:14 AM		

011310

SAMPLE CHAIN OF CUSTODY

WE

11/17/20

Page # 1 of 2

SAMPLERS (signature) B. C. C.Report To Breyn Green, Baxter CellPROJECT NAME
Car Wash EnterprisesPO #
080109

Address _____

City, State, ZIP _____

Phone _____ Email bgreen@aspect consulting.com

REMARKS

INVOICE TO

Project specific RIs? - Yes / No

TURNAROUND TIME
☐ Standard turnaround
☐ RUSH
Rush charges authorized by: _____SAMPLE DISPOSAL
☐ Archiving samples
☒ Other Hold for 30 days
Default: Dispose after 30 days

ANALYSES REQUESTED

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	NWTPH-HCID	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	Notes
B-12-11.5	01 A-E	11/17/20	1005	Soil	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-12-16	02		1010			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-13-11	03		1140			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-13-17.5	04		1145			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-13-21	05		1150										Hold
B-11-7	06		1045										Hold
B-11-11.5	07		1058			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-11-16	08		1055			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					Hold
B-11-22	09		1100										Hold
B-08-11	10		1336										Hold

SIGNATURE

PRINT NAME

COMPANY

DATE

TIME

Friedman & Bruya, Inc.

3012 16th Avenue West

Seattle, WA 98119-2029

Ph. (206) 285-8282

Relinquished by: B. C. C.

Received by: _____

Baxter CellAspect11/17/201530

Relinquished by: _____

W. V. H.FBI11/17/201530

Received by: _____

W. V. H.FBI11/17/201530

11/17/20

Page # 2 of 2

Page # 12 of 2

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: <i>B CM</i>	<i>Baxter Call</i>	<i>Aspeeth</i>	<i>4/17/20</i>	<i>1530</i>
Received by: <i>glad</i>	<i>VINHA</i>	<i>EBI</i>	<i>4/17/20</i>	<i>1530</i>
Relinquished by:				
Received by:				

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

November 30, 2020

Breeyn Greer, Project Manager
Aspect Consulting, LLC
710 2nd Ave S, Suite 550
Seattle, WA 98104

Dear Ms Greer:

Included are the results from the testing of material submitted on November 18, 2020 from the Car Wash Enterprises PO 080109, F&BI 011330 project. There are 6 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.



Michael Erdahl
Project Manager

Enclosures
c: Aspect Data
ASP1130R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on November 18, 2020 by Friedman & Bruya, Inc. from the Aspect Consulting, LLC Car Wash Enterprises PO 080109, F&BI 011330 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Aspect Consulting, LLC</u>
011330 -01	B-07-11.5
011330 -02	B-07-16
011330 -03	B-07-18
011330 -04	B-14-11.5
011330 -05	B-14-16
011330 -06	B-06-12
011330 -07	B-06-16

All quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/30/20

Date Received: 11/18/20

Project: Car Wash Enterprises PO 080109, F&BI 011330

Date Extracted: 11/24/20

Date Analyzed: 11/24/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES AND TPH AS GASOLINE
USING METHODS 8021B AND NWTPH-Gx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl Benzene</u>	<u>Total Xylenes</u>	<u>Gasoline Range</u>	<u>Surrogate (% Recovery)</u> (Limit 50-150)
B-07-16 011330-02	<0.02	<0.02	<0.02	<0.06	<5	79
B-14-16 011330-05	<0.02	<0.02	<0.02	<0.06	<5	90
B-06-16 011330-07	<0.02	<0.02	<0.02	<0.06	<5	90
Method Blank 00-2592 MB	<0.02	<0.02	<0.02	<0.06	<5	78

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/30/20

Date Received: 11/18/20

Project: Car Wash Enterprises PO 080109, F&BI 011330

Date Extracted: 11/20/20

Date Analyzed: 11/20/20

**RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**

Results Reported on a Dry Weight Basis

Results Reported as mg/kg (ppm)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> <u>(% Recovery)</u> (Limit 48-168)
B-07-16 011330-02	<50	<250	93
B-14-16 011330-05	<50	<250	94
B-06-16 011330-07	<50	<250	89
Method Blank 00-2575 MB	<50	<250	96

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/30/20

Date Received: 11/18/20

Project: Car Wash Enterprises PO 080109, F&BI 011330

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES
FOR BENZENE, TOLUENE, ETHYLBENZENE,
XYLENES, AND TPH AS GASOLINE
USING EPA METHOD 8021B AND NWTPH-Gx**

Laboratory Code: 011330-02 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Benzene	mg/kg (ppm)	<0.02	<0.02	nm
Toluene	mg/kg (ppm)	<0.02	<0.02	nm
Ethylbenzene	mg/kg (ppm)	<0.02	<0.02	nm
Xylenes	mg/kg (ppm)	<0.06	<0.06	nm
Gasoline	mg/kg (ppm)	<5	<5	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	mg/kg (ppm)	0.5	86	69-120
Toluene	mg/kg (ppm)	0.5	88	70-117
Ethylbenzene	mg/kg (ppm)	0.5	90	65-123
Xylenes	mg/kg (ppm)	1.5	87	66-120
Gasoline	mg/kg (ppm)	20	100	71-131

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 11/30/20

Date Received: 11/18/20

Project: Car Wash Enterprises PO 080109, F&BI 011330

**QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-D_x**

Laboratory Code: 011330-02 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	<50	100	94	73-135	6

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	92	74-139

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht - The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

$$ME = 11 - 18 - 20 \quad VS3/Bo2$$

Page # 1001 of 1001

☐ Standard turnaround
☐ RUSH _____

10

Walden Publishing

100

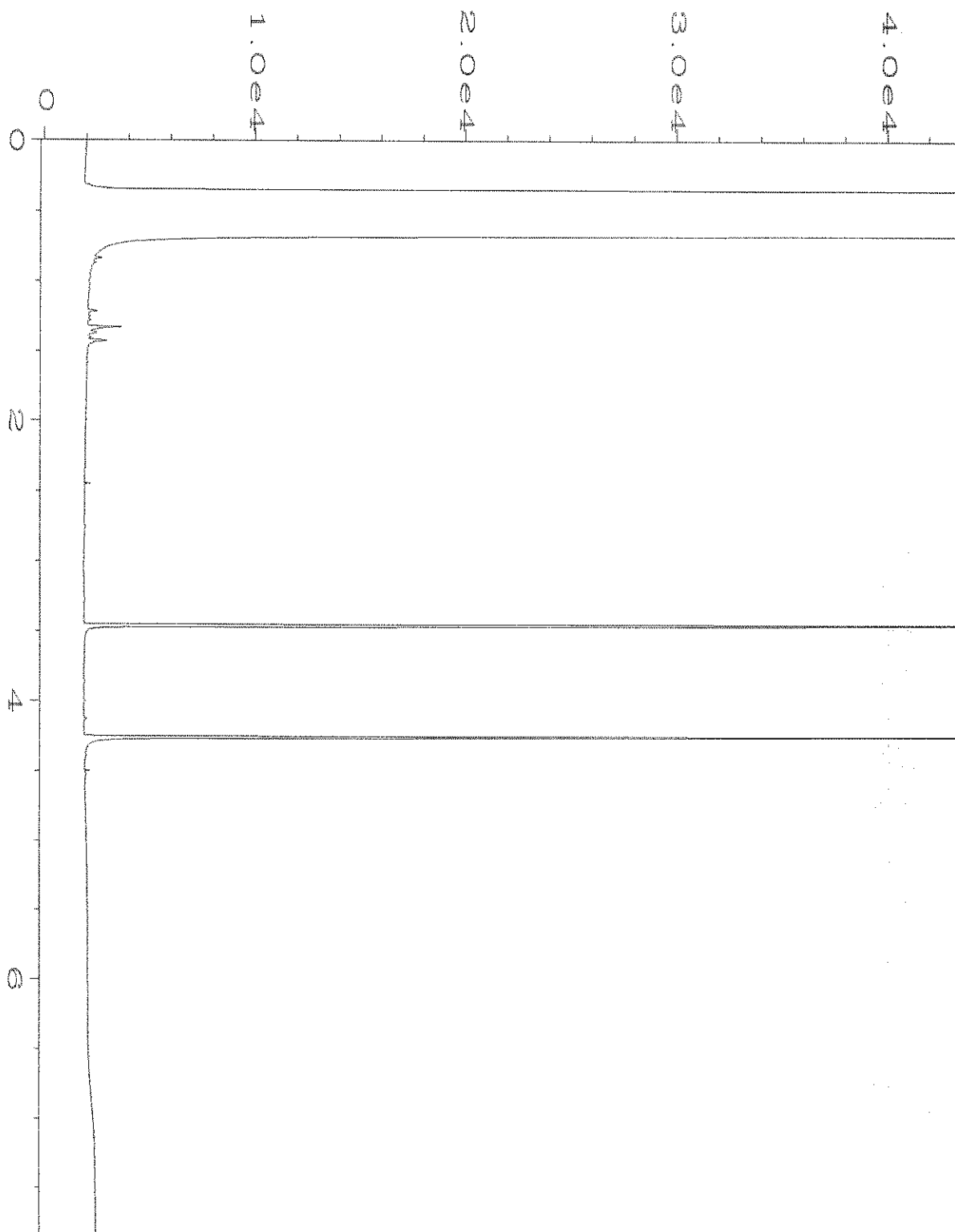
[illegible]

11/06/20	1778
----------	------

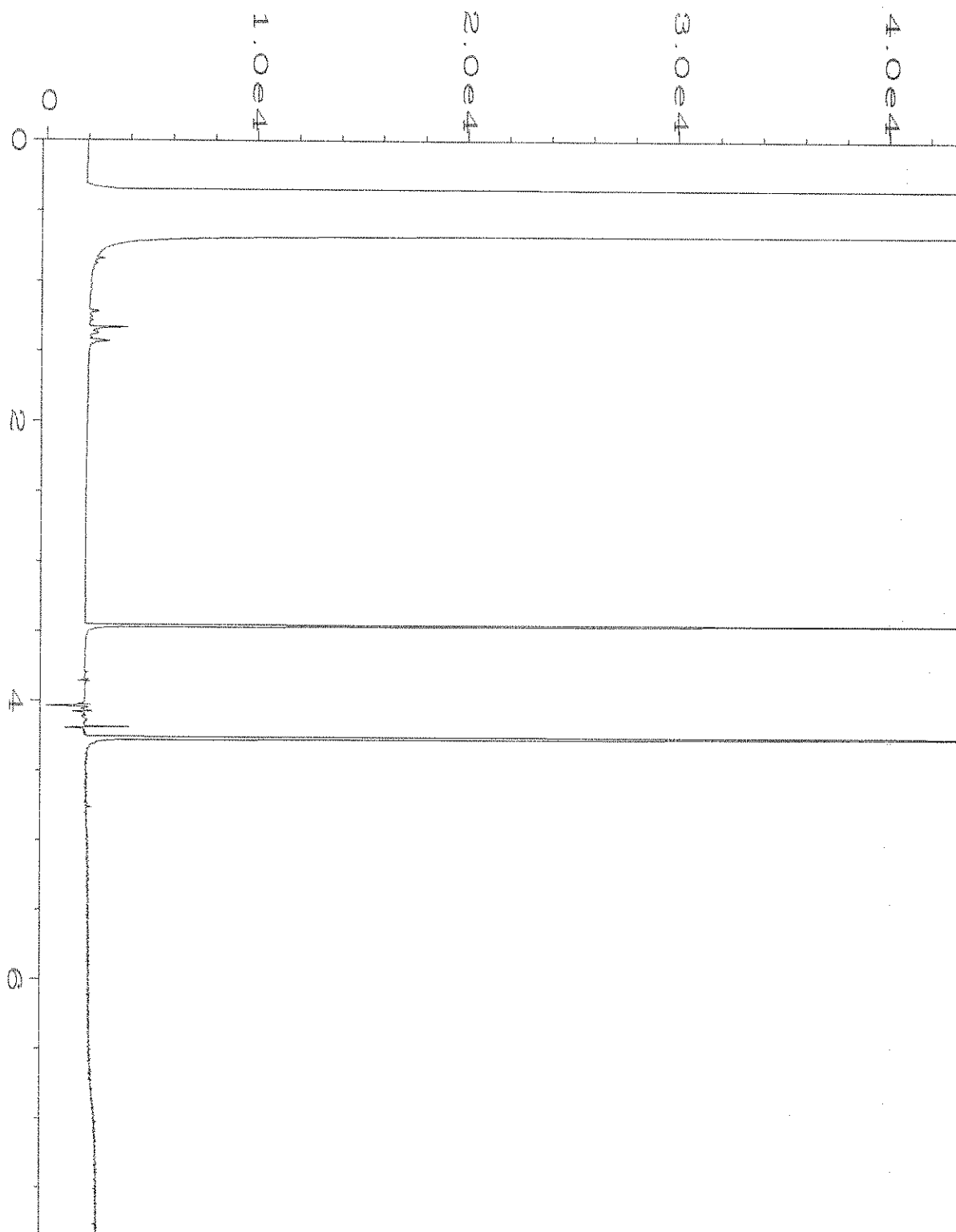
10/10/10	10/10/10
----------	----------

150

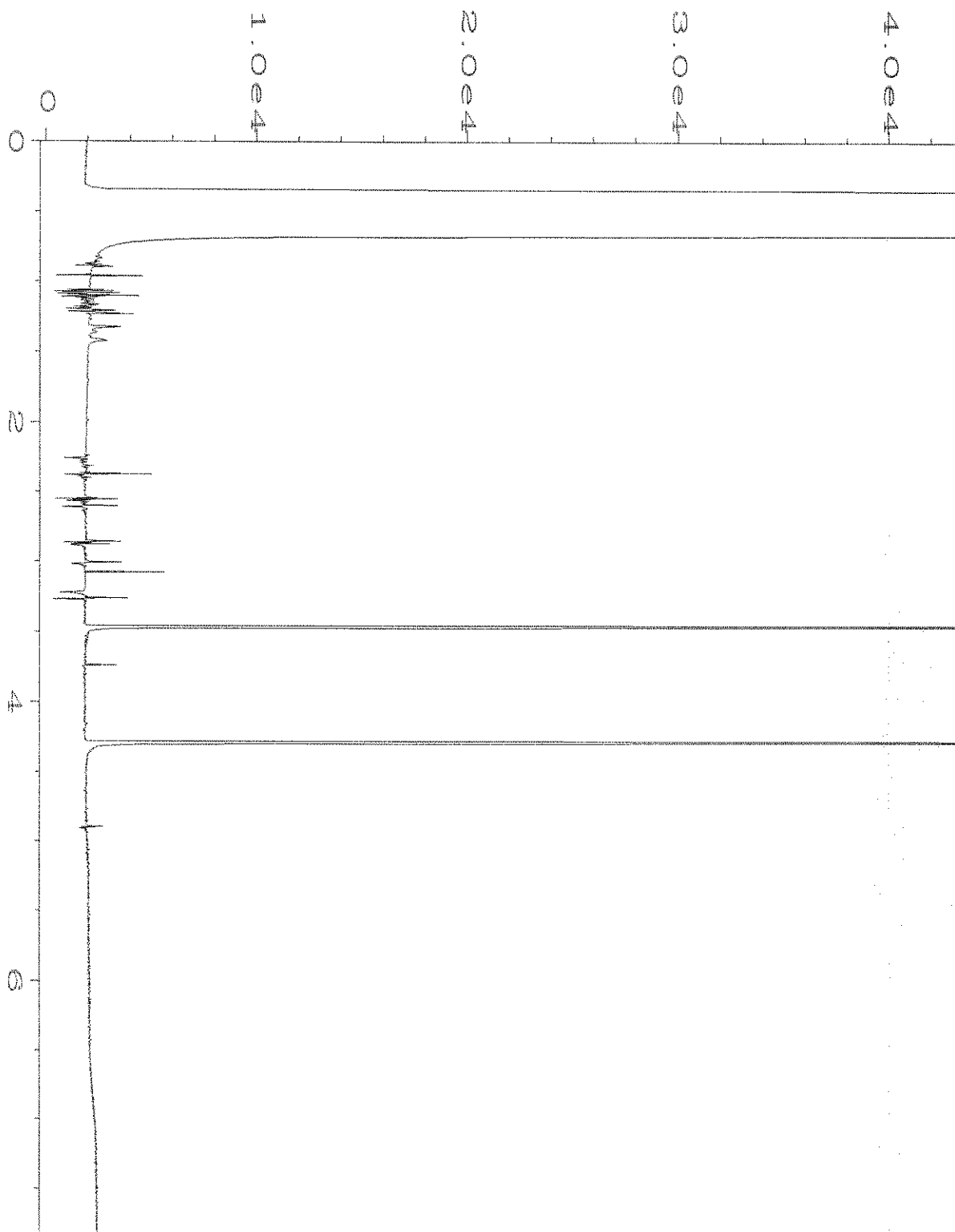
at 2



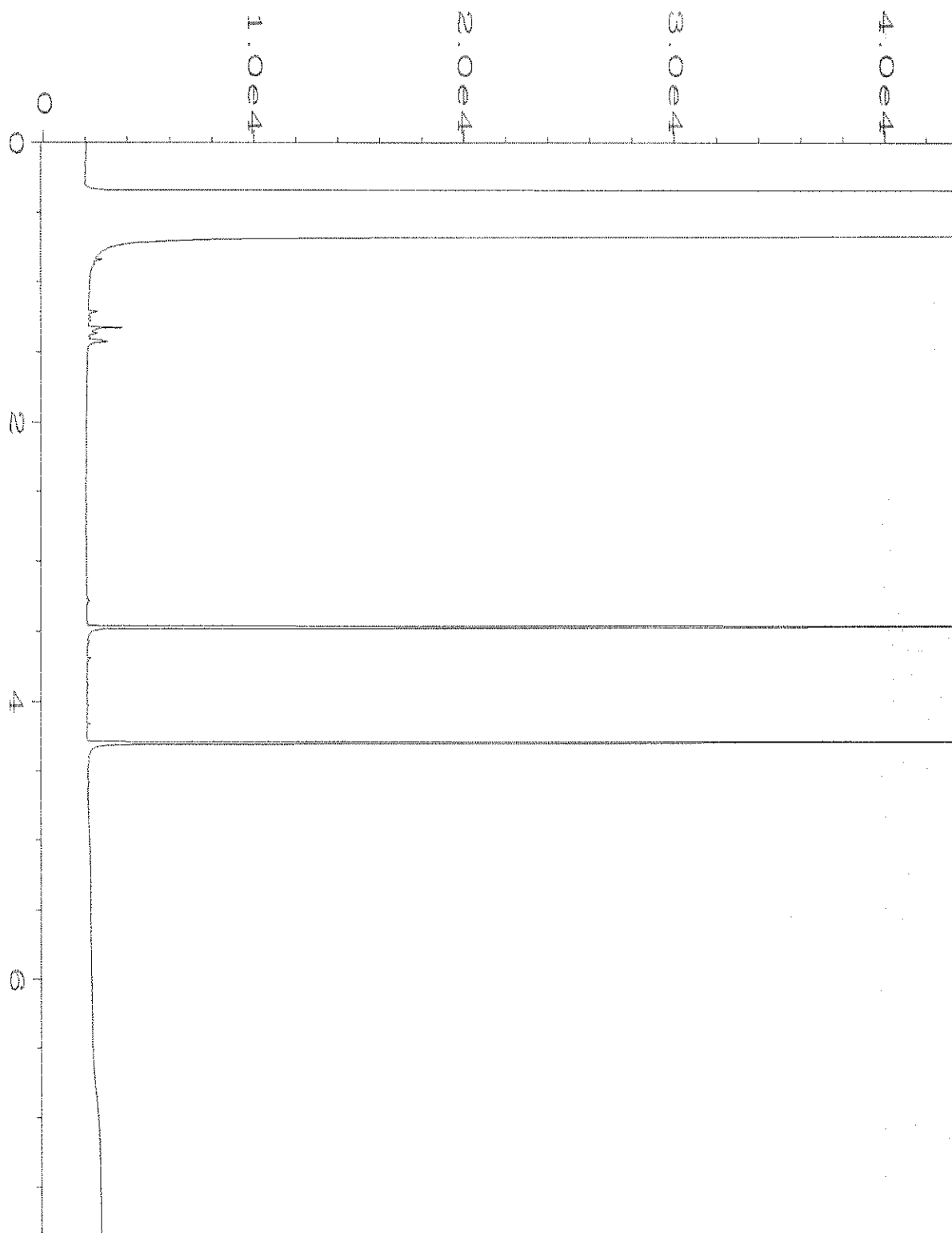
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\010F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 10
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011330-02	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 08:39 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:47 AM		



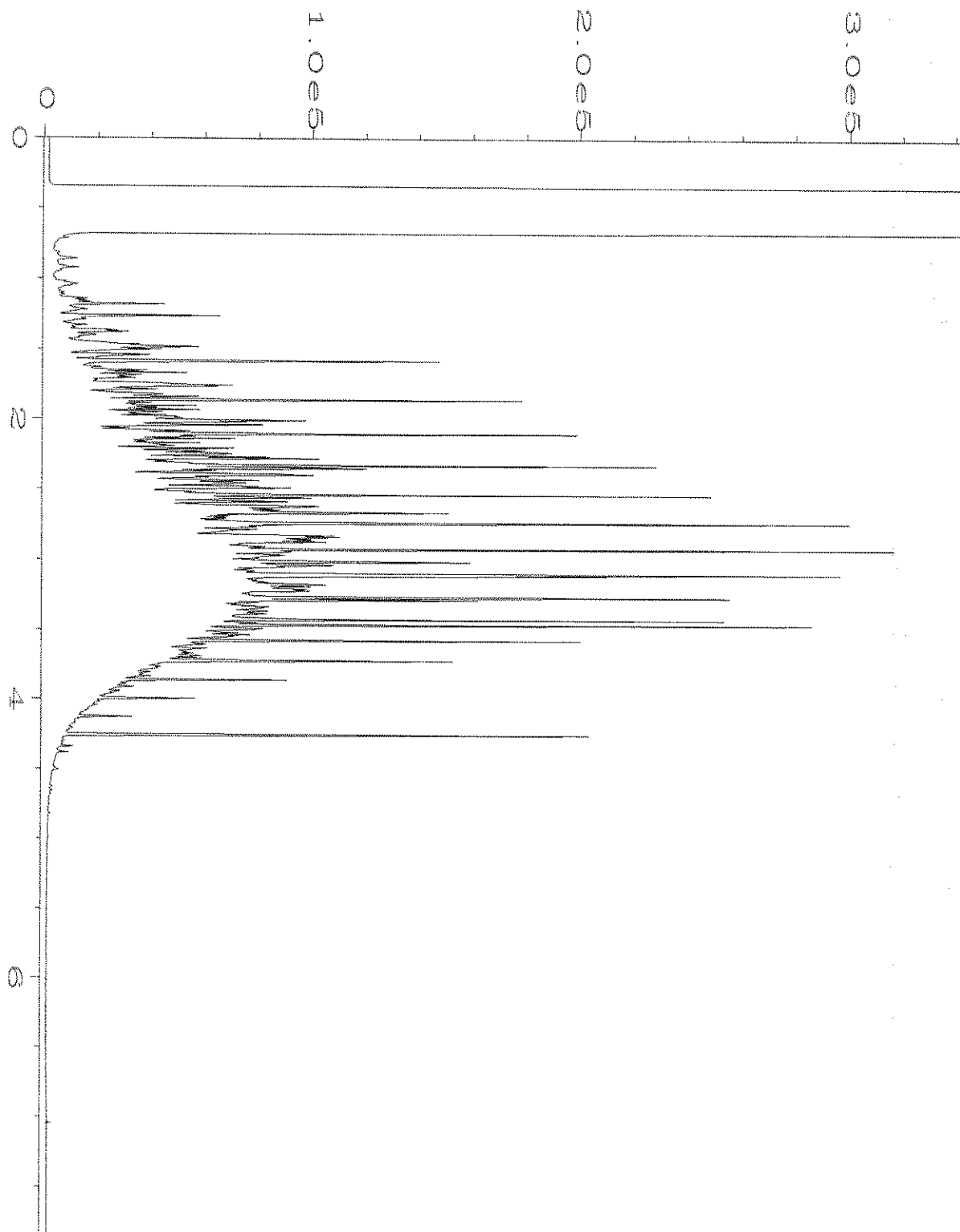
Data File Name	: C:\HPCHEM\4\DATA\11-20-20\011F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 11
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011330-05	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 08:52 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:47 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\012F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 12
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 011330-07	Sequence Line	: 3
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 09:04 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:48 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\006F0301.D	Page Number	: 1
Operator	: TL	Vial Number	: 6
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 00-2575 mb	Sequence Line	: 3
Run Time Bar Code:		Instrument Method	: DX.MTH
Acquired on	: 20 Nov 20 07:52 AM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:48 AM		



Data File Name	: C:\HPCHEM\4\DATA\11-20-20\005F0401.D	Page Number	: 1
Operator	: TL	Vial Number	: 5
Instrument	: GC#4	Injection Number	: 1
Sample Name	: 1000 Dx 61-146C	Sequence Line	: 4
Run Time Bar Code:		Instrument Method:	DX.MTH
Acquired on	: 20 Nov 20 01:30 PM	Analysis Method	: DEFAULT.MTH
Report Created on:	23 Nov 20 07:48 AM		

APPENDIX B

**City of Issaquah
Right of Way Permit
ROW20-00123**

RIGHT OF WAY PERMIT



CITY OF
ISSAQUAH
WASHINGTON

Development Services Department

1775 12th Ave NW

Issaquah, WA 98027

Permit Number:

ROW20-00123

SubType: TRAFFIC CONTROL

Project Name: BROWN BEAR - CAR WASH ENTERPRISES

Site Address: MBP ROW

Parcel Number: 5555555555

Applied: 9/30/2020

Issued: 10/29/2020

Expires: 10/30/2022

Valuation: \$0

Owner

Contractor

HOLT SERVICES INC
10621 TODD RD E
EDGEWOOD, WA 98372
(253) 604-4878

License: HOLTSSI898JG

Description of Work: We propose to complete 6-9 environmental investigation borings with a direct push or hollow stem auger drill rig to test for the presence / absence of petroleum hydrocarbon contamination in the ROW subsurface along the NW Gilman Bldg frontage road at 1st Ave NW. ONLY ONE ROAD WILL BE CLOSED AT A TIME Both 1st Ave NW and the Frontage Road will not have work occurring simultaneously. The work will be completed in approximately 2-business days, and all borings will be back-

Post this permit in an accessible location at the job site and have full size approved plans available.

To schedule or cancel an inspection, go to **MyBuildingPermit.com**.
For cancelations on day of, please call 425-837-3100. Re-inspection fee may be assessed if inspector has been dispatched.

Inspection request cut off: 6:00 AM (backflow is 3:30 day before)
You may optionally request AM or PM in the "Message to Inspector" box.
Homeowners may request a two-hour window between 8am and 3:30pm.
Requests are not guaranteed.



Permit Expiration

There is limited ability to extend the expiration date. Please call 425-837-3100 if you have questions about permit expiration.

Hiring an unlicensed contractor is prohibited and carries potential risk and monetary liability to the property owner. Visit HiringaContractor.Lni.wa.gov or call 1-800-647-0982 to learn more.

Occupancy

Single Family & Duplexes: The final sign-off on the inspection card is your Certificate of Occupancy.

New Non-Residential and Change of Use: Certificate of Occupancy is required. Bring fully signed off permit card to the Permit Center for your certificate.

Site Address: MBP ROW

All inspections are required by law. Do not proceed until previous inspections are signed. This card and printed full size approved plans must be posted at the job site at all times.

	TCO			C of O	
	Insp	Date	Expires	Insp	Date

[illegible]

Required Conditions for ROW20-00123

No	Title
1	#SPECIAL CONDITION
WET WEATHER PRECON Pre-construction meeting onsite is required for all work starting or continuing beginning October 1st through April 30th.	
2	DSD ROW WQ
Right of Way (ROW) 1) Secondary containment is required for all chemical and harmful or hazardous material storage, dispensing, refueling, and handling activities that may occur within a City ROW. 2) Vehicles and/or equipment found to be leaking any amount of fuel, hydraulic fluid, and/or other harmful or hazardous materials shall be immediately contained and subsequently removed from the ROW until the cause of leakage is adequately repaired. 3) Spill material(s) and clean-up supplies sufficient for the immediate clean-up of the worst-case release shall be provided and located in close proximity to any equipment or vehicles operating in the ROW. 4) Releases of any chemicals or hazardous materials to the ground and/or environment is considered an illicit discharge and prohibited. If a discharge occurs it must be immediately contained, reported to the City at (425) 837-3470 and appropriate state agencies, and appropriately cleaned up. It is the responsibility of the permittee to remediate any contaminated media and dispose of waste/contamination, in accordance with state and local requirements.	
3	PWE CONSTRUCTION CONDITIONS 1
1. Contractor shall notify DSD of the Job start 24 hours prior to start of work. Contractor shall also notify the city of job completion for final sign off. Inspections are scheduled on mybuildingpermit.com. 2. Construction hours are from 7 00 AM to 6 00 PM, Monday through Friday, excluding holidays per IMC 16.35.010; extended hours must be requested in writing. 3. A copy of the approved Permit & Plans shall be on site at all times during all construction. 4. Contractor will be required to pothole waterline prior to any excavation if there is a possible utility conflict. 5. All construction shall be in accordance with the City of Issaquah. It shall be the sole responsibility of the applicant and the professional engineer to correct any error, omission, or variation from the approved construction or conditions of approval. All corrections shall be at no additional cost or liability to the City of Issaquah.	

APPENDIX C

Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting, LLC (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Phase I ESAs – Uncertainty Remains After Completion

Aspect has performed the services in general accordance with the scope and limitations of our Agreement and the current version of the “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process”, ASTM E1527, and U.S. Environmental Protection Agency (EPA)'s Federal Standard 40 CFR Part 312 "Innocent Landowners, Standards for Conducting All Appropriate Inquiries".

No ESA can wholly eliminate uncertainty regarding the potential for recognized environmental conditions in connection with subject property. Performance of an ESA study is intended to reduce, but not eliminate, uncertainty regarding the potential for environmental conditions affecting the subject property. There is always a potential that areas with contamination that were not identified during this ESA exist at the subject property or in the study area. Further evaluation of such potential would require additional research, subsurface exploration, sampling and/or testing.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.

Exclusion of Mold, Fungus, Radon, Lead, and HBM

Aspect's services do not include the investigation, detection, prevention or assessment of the presence of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Accordingly, this report does not include any interpretations, recommendations, findings, or conclusions regarding the detection, assessment, prevention or abatement of molds, fungi, spores, bacteria, and viruses, and/or any of their byproducts. Aspect's services also do not include the investigation or assessment of hazardous building materials (HBM) such as asbestos, polychlorinated biphenyls (PCBs) in light ballasts, lead based paint, asbestos-containing building materials, urea-formaldehyde insulation in on-site structures or debris or any other HBMs. Aspect's services do not include an evaluation of radon or lead in drinking water, unless specifically requested.

MEMORANDUM

DATE: November 11, 2019

TO: Chasen Simpson, P.E.
City of Issaquah

FROM: Curtis Chin, P.E.
TENW

SUBJECT: Brown Bear Car Wash – Issaquah, WA (PRE19-0004)
Trip Generation and Queue Analysis
TENW Project No. 6029

This memorandum documents the trip generation estimate and queue analysis for the proposed Brown Bear Car Wash Issaquah facility. The analysis was completed in response to the City's Pre-Application Review comments dated July 19, 2019 which included a request for the applicant to provide daily vehicular trips and peak hour queuing information from a comparable Brown Bear Car Wash site.

The proposed Issaquah Brown Bear Car Wash site is located at 55 NW Gilman Blvd.



Project Description

The proposed Brown Bear Car Wash facility would include the construction of a single 2,524 SF car wash tunnel. A preliminary site plan is included as **Attachment A**.

Trip Generation and Peak Hour Queueing

To estimate daily trips and peak hour queueing for the proposed project, the City of Issaquah requested that data be collected at a similar local car wash facility. Based on your previous correspondence with Barghausen Consulting Engineers, the existing Sammamish Brown Bear Car Wash facility located at 3050 228th Ave SE was confirmed to be an adequate comparable site to be studied.

The hours of operation of the tunnel car wash at the existing Sammamish Brown Bear Car Wash are:

- Monday through Saturday: 8:00 AM to 7:00 PM
- Sunday: 9:00 AM to 7:00 PM

To determine the daily trip generation of the comparable Sammamish Brown Bear Car Wash, traffic counts were conducted on Wednesday 10/23/19, Thursday 10/24/19, and Saturday 10/26/19. The number of vehicles using the tunnel car wash and the ancillary detail express station were recorded between 7:00 AM to 8:00 PM (1 hour before and after the hours of operations of the tunnel car wash). In addition, the maximum observed vehicle queue for each day was recorded. Based on the data collected, the following **Table 1** summarizes the daily traffic counts and maximum observed vehicles queues.

Table 1
Sammamish Brown Bear Car Wash (3050 228th Ave SE, Sammamish, WA)
Daily Trip Generation and Queue Results

		<u>Maximum Vehicle Queue Observed</u>	
Day of Week	Total Daily Trips	Vehicles ¹	Time Period
Weekday			
Wednesday 10/23/19	768	4 veh	1:00 – 2:00 PM
Thursday 10/24/19	590	4 veh	4:00 – 5:00 PM
Two-Day Average =	679	-	-
Weekend			
Saturday 10/26/19	526	7 veh	4:15 – 5:15 PM

Note:

1. Maximum observed queue for the day.

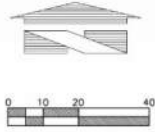
As shown in **Table 1**, the two-day average weekday trip generation is 679 trips and the Saturday daily trip generation is 526 trips. The peak observed queues was 4 vehicles on a weekday 7 vehicles on a Saturday. The trip generation data collected over the three days studied is included in **Attachment B**.

If you have any questions, please feel free to contact me at (206) 714-7421 or chin@tenw.com.

cc: Nick Wecker, Barghausen Consulting Engineers
Caitlin Hepworth, Barghausen Consulting Engineers
Jeff Schramm, TENW Planning Manager

ATTACHMENT A

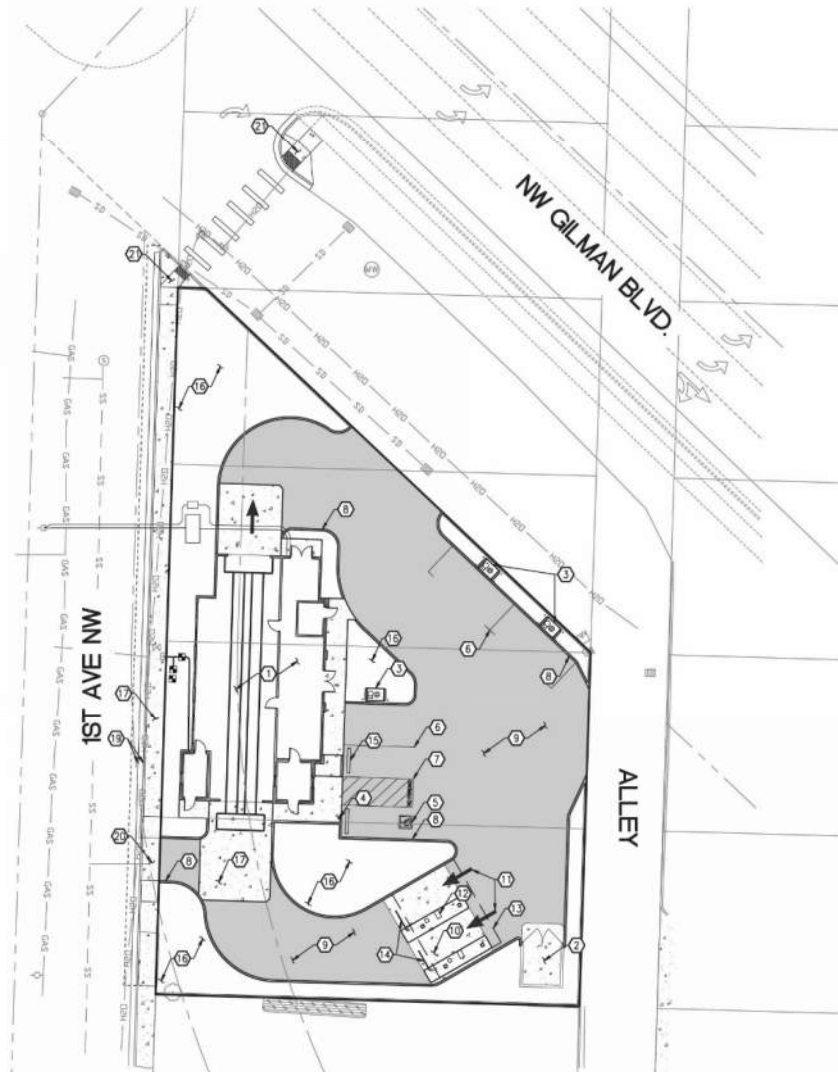
Preliminary Site Plan



SITE PLAN
FOR
BROWN BEAR CAR WASH
SE $\frac{1}{4}$ OF NE $\frac{1}{4}$ OF SEC. 28, TWN. 24 N, RGE. 6 E, W.M.
CITY OF ISSAQUAH, KING COUNTY, WASHINGTON

CONSTRUCTION NOTES: SITE PLAN

1. NEW BROWN BEAR CAR WASH.
2. NEW TRASH ENCLOSURE WITH CONCRETE PAD.
3. NEW VACUUM UNIT.
4. NEW ACCESSIBLE PARKING SIGN.
5. NEW ACCESSIBLE PAVEMENT SYMBOL.
6. PARKING STALL MARKINGS SHALL BE 4" WIDE WHITE PAINTED STRIPES TO DIMENSIONS (TYP.).
7. PAVEMENT MARKINGS - 4" WIDE WHITE PAINTED STRIPES @ 3' O.C. / 45° ANGLE.
8. NEW ON-SITE BARRIER CURB.
9. NEW ASPHALT PAVEMENT.
10. NEW CONCRETE SLAB UNDER CANOPY.
11. WHITE PAINTED DIRECTION ARROWS.
12. NEW AUTO SENTRY.
13. NEW AUTO SENTRY CANOPY.
14. NEW CLEARANCE SIGN.
15. NEW WHEEL STOP (TYP. OF 2).
16. NEW LANDSCAPING.
17. NEW CONCRETE SLAB.
18. NEW OFF-SITE SIDEWALK PER CITY OF ISSAQUAH STANDARD DRAWING T-38.
19. NEW CURB AND GUTTER PER CITY OF ISSAQUAH STANDARD DRAWING T-38.
20. NEW COMMERCIAL DRIVEWAY FOR CARWASH BYPASS PER CITY OF ISSAQUAH STANDARD DRAWING T-38.
21. NEW PERPENDICULAR RAMP PER CITY OF ISSAQUAH STANDARD DRAWING T-08.



Attachment A: Site Plan

ATTACHMENT B

Sammamish Brown Bear Car Wash (3050 228th Ave SE)
Trip Generation Data

Brown Bear Car Wash¹
Existing Trip Generation and Maximum Queues Summary - Weekday Daily
Wednesday 10/23/19 and Thursday 10/24/19

Day	Weekday Daily Trip Generation			Maximum Vehicle Queue Observed	
	In	Out	Total	Time Period	Max Queue (Veh)
Wednesday - October 23, 2019	384	384	768	1:00-2:00 p.m.	4
Thursday - October 24, 2019	295	295	590	4:00-5:00 p.m.	4
2-Day Average			679		

Note:

1. The existing Brown Bear Car Wash is located at 3050 228th Ave SE in the City of Sammamish.

Brown Bear Car Wash (3050 228th Ave SE, Sammamish, WA)
Existing Trip Generation Summary - Daily
Wednesday - October 23, 2019

Interval Begin	Drive Thru Tunnel		Detail Express Stall		Total Trips				
	In	Out	In	Out	In	Out	Total		
7:00 AM	0	0	1	1	1	1	2		
7:15 AM	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0		
8:00 AM	2	2	1	0	3	2	5	2	7:00 - 8:00 a.m.
8:15 AM	4	4	1	2	5	6	11	5	7:15 - 8:15 a.m.
8:30 AM	2	2	0	0	2	2	4	16	7:30 - 8:30 a.m.
8:45 AM	2	2	1	0	3	2	5	20	7:45 - 8:45 a.m.
9:00 AM	3	3	0	1	3	4	7	25	8:00 - 9:00 a.m.
9:15 AM	6	6	0	0	6	6	12	27	8:15 - 9:15 a.m.
9:30 AM	3	3	0	0	3	3	6	28	8:30 - 9:30 a.m.
9:45 AM	5	5	0	0	5	5	10	30	8:45 - 9:45 a.m.
10:00 AM	9	9	3	1	12	10	22	35	9:00 - 10:00 a.m.
10:15 AM	10	10	1	2	11	12	23	50	9:15 - 10:15 a.m.
10:30 AM	8	8	0	1	8	9	17	61	9:30 - 10:30 a.m.
10:45 AM	9	9	1	1	10	10	20	72	9:45 - 10:45 a.m.
11:00 AM	6	6	2	2	8	8	16	82	10:00 - 11:00 a.m.
11:15 AM	9	9	3	1	12	10	22	76	10:15 - 11:15 a.m.
11:30 AM	7	7	2	3	9	10	19	75	10:30 - 11:30 a.m.
11:45 AM	5	5	0	1	5	6	11	77	10:45 - 11:45 a.m.
12:00 PM	7	7	1	0	8	7	15	68	11:00 - 12:00 p.m.
12:15 PM	8	8	1	2	9	10	19	67	11:15 - 12:15 a.m.
12:30 PM	8	8	2	1	10	9	19	64	11:30 - 12:30 a.m.
12:45 PM	11	11	1	1	12	12	24	64	11:45 - 12:45 a.m.
1:00 PM	9	9	1	1	10	10	20	77	12:00 - 1:00 p.m.
1:15 PM	8	8	0	1	8	9	17	82	12:15 - 1:15 p.m.
1:30 PM	5	5	0	0	5	5	10	80	12:30 - 1:30 p.m.
1:45 PM	10	10	3	1	13	11	24	71	12:45 - 1:45 p.m.
2:00 PM	9	9	1	2	10	11	21	71	1:00 - 2:00 p.m.
2:15 PM	9	9	1	0	10	9	19	72	1:15 - 2:15 p.m.
2:30 PM	12	12	1	1	13	13	26	74	1:30 - 2:30 p.m.
2:45 PM	7	7	1	3	8	10	18	90	1:45 - 2:45 p.m.
3:00 PM	13	13	2	0	15	13	28	84	2:00 - 3:00 p.m.
3:15 PM	10	10	1	1	11	11	22	91	2:15 - 3:15 p.m.
3:30 PM	9	9	1	3	10	12	22	94	2:30 - 3:30 p.m.
3:45 PM	10	10	0	2	10	12	22	90	2:45 - 3:45 p.m.
4:00 PM	10	10	2	0	12	10	22	94	3:00 - 4:00 p.m.
4:15 PM	11	11	1	1	12	12	24	88	3:15 - 4:15 p.m.
4:30 PM	13	13	2	2	15	15	30	90	3:30 - 4:30 p.m.
4:45 PM	9	9	2	1	11	10	21	98	3:45 - 4:45 p.m.
5:00 PM	16	16	2	2	18	18	36	97	4:00 - 5:00 p.m.
5:15 PM	7	7	3	3	10	10	20	111	4:15 - 5:15 p.m.
5:30 PM	10	10	0	1	10	11	21	107	4:30 - 5:30 p.m.
5:45 PM	2	2	0	0	2	2	4	98	4:45 - 5:45 p.m.
6:00 PM	10	10	2	1	12	11	23	81	5:00 - 6:00 p.m.
6:15 PM	3	3	1	2	4	5	9	68	5:15 - 6:15 p.m.
6:30 PM	2	2	1	1	3	3	6	57	5:30 - 6:30 p.m.
6:45 PM	4	4	1	0	5	4	9	42	5:45 - 6:45 p.m.
7:00 PM	1	1	0	1	1	2	3	47	6:00 - 7:00 p.m.
7:15 PM	0	0	0	0	0	0	0	27	6:15 - 7:15 p.m.
7:30 PM	0	0	1	0	1	0	1	18	6:30 - 7:30 p.m.
7:45 PM	0	0	0	1	0	1	1	13	6:45 - 7:45 p.m.
								5	7:00 - 8:00 p.m.
Total	333	333	51	51	384	384	768		

Brown Bear Car Wash (3050 228th Ave SE, Sammamish, WA)
Existing Trip Generation Summary - Daily
Thursday - October 24, 2019

Interval Begin	Drive Thru Tunnel		Detail Express Stall		Total Trips			Hourly Totals	
	In	Out	In	Out	In	Out	Total		
7:00 AM	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0		
7:45 AM	1	1	0	0	1	1	2	2	7:00 - 8:00 a.m.
8:00 AM	3	3	0	0	3	3	6	8	7:15 - 8:15 a.m.
8:15 AM	2	2	1	0	3	2	5	13	7:30 - 8:30 a.m.
8:30 AM	3	3	0	1	3	4	7	20	7:45 - 8:45 a.m.
8:45 AM	4	4	0	0	4	4	8	26	8:00 - 9:00 a.m.
9:00 AM	3	3	0	0	3	3	6	26	8:15 - 9:15 a.m.
9:15 AM	4	4	2	0	6	4	10	31	8:30 - 9:30 a.m.
9:30 AM	9	9	1	2	10	11	21	45	8:45 - 9:45 a.m.
9:45 AM	8	8	2	1	10	9	19	56	9:00 - 10:00 a.m.
10:00 AM	4	4	1	1	5	5	10	60	9:15 - 10:15 a.m.
10:15 AM	6	6	0	2	6	8	14	64	9:30 - 10:30 a.m.
10:30 AM	6	6	1	0	7	6	13	56	9:45 - 10:45 a.m.
10:45 AM	7	7	3	1	10	8	18	55	10:00 - 11:00 a.m.
11:00 AM	6	6	0	3	6	9	15	60	10:15 - 11:15 a.m.
11:15 AM	8	8	0	0	8	8	16	62	10:30 - 11:30 a.m.
11:30 AM	7	7	0	0	7	7	14	63	10:45 - 11:45 a.m.
11:45 AM	6	6	1	0	7	6	13	58	11:00 - 12:00 p.m.
12:00 PM	9	9	1	1	10	10	20	63	11:15 - 12:15 a.m.
12:15 PM	6	6	1	1	7	7	14	61	11:30 - 12:30 a.m.
12:30 PM	7	7	2	1	9	8	17	64	11:45 - 12:45 a.m.
12:45 PM	7	7	0	1	7	8	15	66	12:00 - 1:00 p.m.
1:00 PM	12	12	3	2	15	14	29	75	12:15 - 1:15 p.m.
1:15 PM	7	7	1	2	8	9	17	78	12:30 - 1:30 p.m.
1:30 PM	9	9	2	2	11	11	22	83	12:45 - 1:45 p.m.
1:45 PM	4	4	1	2	5	6	11	79	1:00 - 2:00 p.m.
2:00 PM	5	5	1	1	6	6	12	62	1:15 - 2:15 p.m.
2:15 PM	9	9	0	0	9	9	18	63	1:30 - 2:30 p.m.
2:30 PM	8	8	2	1	10	9	19	60	1:45 - 2:45 p.m.
2:45 PM	8	8	0	1	8	9	17	66	2:00 - 3:00 p.m.
3:00 PM	7	7	0	0	7	7	14	68	2:15 - 3:15 p.m.
3:15 PM	7	7	2	2	9	9	18	68	2:30 - 3:30 p.m.
3:30 PM	11	11	2	0	13	11	24	73	2:45 - 3:45 p.m.
3:45 PM	5	5	0	2	5	7	12	68	3:00 - 4:00 p.m.
4:00 PM	9	9	2	0	11	9	20	74	3:15 - 4:15 p.m.
4:15 PM	4	4	0	0	4	4	8	64	3:30 - 4:30 p.m.
4:30 PM	5	5	1	2	6	7	13	53	3:45 - 4:45 p.m.
4:45 PM	4	4	0	1	4	5	9	50	4:00 - 5:00 p.m.
5:00 PM	2	2	0	0	2	2	4	34	4:15 - 5:15 p.m.
5:15 PM	6	6	1	1	7	7	14	40	4:30 - 5:30 p.m.
5:30 PM	5	5	0	0	5	5	10	37	4:45 - 5:45 p.m.
5:45 PM	4	4	0	0	4	4	8	36	5:00 - 6:00 p.m.
6:00 PM	6	6	0	0	6	6	12	44	5:15 - 6:15 p.m.
6:15 PM	4	4	1	1	5	5	10	40	5:30 - 6:30 p.m.
6:30 PM	2	2	0	0	2	2	4	34	5:45 - 6:45 p.m.
6:45 PM	0	0	0	0	0	0	0	26	6:00 - 7:00 p.m.
7:00 PM	0	0	0	0	0	0	0	14	6:15 - 7:15 p.m.
7:15 PM	0	0	0	0	0	0	0	4	6:30 - 7:30 p.m.
7:30 PM	0	0	0	0	0	0	0	0	6:45 - 7:45 p.m.
7:45 PM	0	0	1	1	1	1	2	2	7:00 - 8:00 p.m.
Total	259	259	36	36	295	295	590		

Brown Bear Car Wash¹
Existing Trip Generation and Maximum Queues Summary - Saturday Daily
Saturday 10/26/19

Day	Weekday Daily Trip Generation			Maximum Vehicle Queue Observed	
	In	Out	Total	Time Period	Max Queue (Veh)
Saturday - October 26, 2019	263	263	526	4:15 - 5:15 p.m.	7
Total			526		

Note:

1. The existing Brown Bear Car Wash is located at 3050 228th Ave SE in the City of Sammamish.

Brown Bear Car Wash
Existing Trip Generation Summary - Daily
Saturday - October 26, 2019

Interval Begin	Drive Thru Tunnel		Detail Express Stall		Total Trips				
	In	Out	In	Out	In	Out	Total		
7:00 AM	0	0	0	0	0	0	0		
7:15 AM	0	0	0	0	0	0	0		
7:30 AM	0	0	0	0	0	0	0		
7:45 AM	0	0	0	0	0	0	0		
8:00 AM	1	1	0	0	1	1	2	0	Hourly Totals
8:15 AM	3	3	0	0	3	3	6	2	7:00 - 8:00 a.m.
8:30 AM	5	5	1	0	6	5	11	8	7:15 - 8:15 a.m.
8:45 AM	3	3	0	1	3	4	7	19	7:30 - 8:30 a.m.
9:00 AM	4	4	1	1	5	5	10	26	7:45 - 8:45 a.m.
9:15 AM	1	1	2	2	3	3	6	34	8:00 - 9:00 a.m.
9:30 AM	5	5	2	0	7	5	12	34	8:15 - 9:15 a.m.
9:45 AM	2	2	1	2	3	4	7	35	8:30 - 9:30 a.m.
10:00 AM	3	3	0	1	3	4	7	35	8:45 - 9:45 a.m.
10:15 AM	1	1	0	0	1	1	2	32	9:00 - 10:00 a.m.
10:30 AM	3	3	0	0	3	3	6	28	9:15 - 10:15 a.m.
10:45 AM	5	5	0	0	5	5	10	22	9:30 - 10:30 a.m.
11:00 AM	3	3	2	0	5	3	8	25	9:45 - 10:45 a.m.
11:15 AM	6	6	2	2	8	8	16	26	10:00 - 11:00 a.m.
11:30 AM	8	8	1	2	9	10	19	40	10:15 - 11:15 a.m.
11:45 AM	7	7	3	2	10	9	19	53	10:30 - 11:30 a.m.
12:00 PM	6	6	1	1	7	7	14	62	10:45 - 11:45 a.m.
12:15 PM	7	7	2	2	9	9	18	68	11:00 - 12:00 p.m.
12:30 PM	8	8	0	0	8	8	16	70	11:15 - 12:15 a.m.
12:45 PM	10	10	0	2	10	12	22	70	11:30 - 12:30 a.m.
1:00 PM	2	2	2	0	4	2	6	67	11:45 - 12:45 a.m.
1:15 PM	6	6	2	2	8	8	16	62	12:00 - 1:00 p.m.
1:30 PM	1	1	0	2	1	3	4	60	12:15 - 1:15 p.m.
1:45 PM	2	2	2	0	4	2	6	48	12:30 - 1:30 p.m.
2:00 PM	2	2	0	1	2	3	5	32	12:45 - 1:45 p.m.
2:15 PM	6	6	1	1	7	7	14	31	1:00 - 2:00 p.m.
2:30 PM	1	1	0	1	1	2	3	29	1:15 - 2:15 p.m.
2:45 PM	2	2	0	0	2	2	4	28	1:30 - 2:30 p.m.
3:00 PM	2	2	1	1	3	3	6	26	1:45 - 2:45 p.m.
3:15 PM	8	8	1	1	9	9	18	27	2:00 - 3:00 p.m.
3:30 PM	8	8	2	1	10	9	19	31	2:15 - 3:15 p.m.
3:45 PM	9	9	1	1	10	10	20	47	2:30 - 3:30 p.m.
4:00 PM	7	7	0	1	7	8	15	63	2:45 - 3:45 p.m.
4:15 PM	20	20	2	0	22	20	42	72	3:00 - 4:00 p.m.
4:30 PM	12	12	0	1	12	13	25	96	3:15 - 4:15 p.m.
4:45 PM	11	11	1	1	12	12	24	102	3:30 - 4:30 p.m.
5:00 PM	9	9	2	1	11	10	21	106	3:45 - 4:45 p.m.
5:15 PM	10	10	0	1	10	11	21	112	4:00 - 5:00 p.m.
5:30 PM	7	7	1	2	8	9	17	91	4:15 - 5:15 p.m.
5:45 PM	4	4	0	0	4	4	8	83	4:30 - 5:30 p.m.
6:00 PM	2	2	0	0	2	2	4	67	4:45 - 5:45 p.m.
6:15 PM	1	1	0	0	1	1	2	50	5:00 - 6:00 p.m.
6:30 PM	3	3	0	0	3	3	6	31	5:15 - 6:15 p.m.
6:45 PM	0	0	0	0	0	0	0	20	5:30 - 6:30 p.m.
7:00 PM	1	1	0	0	1	1	2	12	5:45 - 6:45 p.m.
7:15 PM	0	0	0	0	0	0	0	10	6:00 - 7:00 p.m.
7:30 PM	0	0	0	0	0	0	0	8	6:15 - 7:15 p.m.
7:45 PM	0	0	0	0	0	0	0	2	6:30 - 7:30 p.m.
								2	6:45 - 7:45 p.m.
									7:00 - 8:00 p.m.
Total	227	227	36	36	263	263	526		



Community Planning & Development Department
1775 – 12th Ave. NW | P.O. Box 1307
Issaquah, WA 98027
425-837-3100 | DSD@issaquahwa.gov

Transportation Concurrency Certificate

This Certificate is issued pursuant to Issaquah Municipal Code 18.15.280 certifying that at the time of issuance this development complied with the requirements of Transportation Concurrency Management, IMC 18.15.

Concurrency No: CON20-00003

Project Name: *BROWN BEAR CAR WASH

Site Address / Location: 55 NW GILMAN BLVD

Parcel(s): 8843500440

Applicant: CAITLIN HEPWORTH
18215 72ND AVENUE SOUTH
KENT, WA 98032

Owner: CAR WASH ENTERPRISES INC
3977 LEARY WAY NW
SEATTLE, WA 98107

Issuance Date: 9/28/2020

Specified Uses: Car Wash Facility

Net New Vehicle Internal Trip Ends: 30

Validity: This certificate is valid only for the specified uses, densities, intensity and parcel(s) for which it was issued and shall not be transferred to a different project or parcel. Validity is pursuant City of Issaquah Municipal Code 18.15.280 (B).

Expiration: This certificate shall expire if 1. A complete development permit application for the project has not been submitted to the Permit Center within one (1) year from the issuance of the concurrency certificate; three (3) years from issuance for a project that includes transferred development rights. 2. The related development permit application is denied or revoked by the City. 3. The related development permit expires prior to issuance of a building permit. Expiration is pursuant City of Issaquah Municipal Code 18.15.280 (C).